Vol. 1009 Number 2

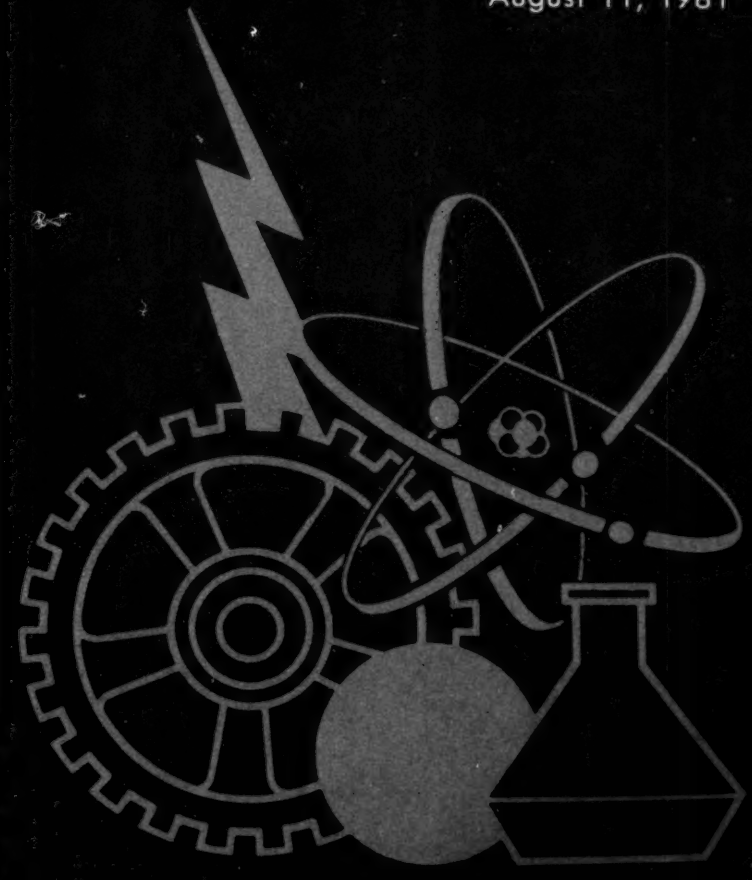
OFFICIAL GAZETTE

of the

UNITED STATES PATENT AND TRADEMARK OFFICE

PATENTS

August 11, 1981



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U.S.
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ERRATA SHEET

The contents page below should have been printed in the issue of August 4, 1981 (Vol. 1009, Number 1). Please remove this page and place in that book.

OFFICIAL GAZETTE of the UNITED STATES PATENT and TRADEMARK OFFICE

August 4, 1981 Volume 1009 Number 1

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The following are mailed under direction of the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, to whom all subscriptions should be made payable and all communications addressed:

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OFFICIAL GAZETTE of the
UNITED STATES PATENT and TRADEMARK OFFICE

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Printing authorized by Section 11(a)3 of Title 35, U.S. Code P.T.O.

PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the PCT, consult Chapter 1800 of the Manual of Patent Examining Procedure and notices 90–95 in the consolidated listing of notices appearing in the Official Gazette of Jan. 6, 1981.

The PCT fees in effect after May 19, 1981 are as follows:

Transmittal fee	$ 35.00
Search fee	300.00
International Basic Fee (for the first 30 sheets of an international application)	215.00
Basic Supplemental Fee (for each sheet over 30)	4.00
International Designation Fee (for each State for which a national patent is sought, or group of States for which the same regional patent is sought)	50.00

RENE D. TEGTMEYER,
Assistant Commissioner for Patents.

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

4,155,488, Re. S.N. 247,651, Filed Mar. 26, 1981, Cl. 222/305, SHOT-FEEDING METERING VALVE, James R. Ware, Owner of Record: *National Petro Chemicals Corp., New York, N.Y.,* Attorney or Agent: None Ex. Gp.: 311

4,159,252, Re. S.N. 258,448, Filed Apr. 28, 1981, Cl. 252/25, LUBRICANT COMPOSITIONS, Paul Wainwright, et al., Owner of Record: *Rocol Ltd., Swillington, England,* Attorney or Agent: Robert B. Larson, et al., Ex. Gp.: 116

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.21(b)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b).

Re. 29,582, Reexam. No. 90/000,026, Requested: July 10, 1981, Cl. 188/73.3, DISC BRAKES AND MOUNTING STRUCTURE THEREFOR, Peter William Brown, Owner of Record: *Girling Ltd.,* Attorney or Agent: Scrivener, Parker, et al., Ex. Gp.: 315, Requester: Armstrong, Nikaido, Marmelstein & Kubovcik, Washington, D.C.

3,367,320, Reexam. No. 90/000,027 Requested: July 14, 1981, Cl. 126/300, SELF-VENTILATING COOKING RANGE, Louis J. Jenn, et al., Owner of Record: *Jenn-Air Corp.,* Attorney or Agent: Gerald L. Price, Ex. Gp.: 345, Requester: Jenn-Air Corp., Indianapolis, Ind.

3,553,638, Reexam. No. 90/000,025, Requested: July 13, 1981, Cl. 367/12, SONAR SCANNING MECHANISM, Kenneth L. Sublett, Owner of Record: *Western Marine Electronics Co.,* Attorney or Agent: Seed, Berry, et al., Ex. Gp.: 222, Requester: Eckhoff, Hoppe, Slick, Mitchell & Anderson, San Francisco, Calif.

3,703,718, Reexam. No. 90/000,021, Requested: July 9, 1981, Cl. 340/567, INFRARED INTRUSION DETECTOR SYSTEM, Herbert L. Berman, Owner of Record: *Hoermann Corp., U.S.A.,* Attorney or Agent: Flehr, Hohbach, et al., Ex. Gp.: 234, Requester: Solfan Systems, Inc., Mountain View, Calif.

3,716,264, Reexam. No. 90/000,020, Requested: July 2, 1981, Cl. 294/63, INFLATABLE GRIPPERS FOR BRICK MAKING OR THE LIKE, Florentine J. Pearne, et al., Owner of Record: *Aircraft Mechanics, Inc.,* Attorney or Agent: McNenny, Farrington, Pearne & Gordon, Ex. Gp.: 313, Requester: EA Industries, Inc., Ashville, N.C.

3,733,438, Reexam. No. 90/000,022, Requested: July 10, 1981, Cl. 370/69, CARRIER SUPPLY FOR FREQUENCY DIVISION MULTIPLEXED SYSTEMS, Thomas John Haley, et al., Owner of Record: *Bell Telephone Laboratories, Inc.,* Attorney or Agent: E. W. Keefauver, Jr., W. L. Keefauver, Ex. Gp.: 236, Requester: Anthony C. Palatinus, Glen Cove, N.Y.

3,887,450, Reexam. No. 90/000,017, Requested: July 2, 1981, Cl. 204/159.15, PHOTOPOLYMERIZABLE COMPOSITIONS CONTAINING POLYMERIC BINDING AGENTS, Michael Gilano, et al., Owner of Record: *Dynochem Corp.,* Attorney or Agent: Bert J. Lewen, Ex. Gp.: 142, Requester: Kalle Niederlassung der Hoechst AG, Federal Republic of Germany

3,953,309, Reexam. No. 90/000,018, Requested: July 2, 1981, Cl. 204/159.16, POLYMERIZATION COMPOSITIONS AND PROCESSES HAVING POLYMERIC BINDING AGENTS, Michael Gilano, et al., Owner of Record: *Dynochem Corp.,* Attorney or Agent: Arthur, Dry & Kalish, Ex. Gp.: 142, Requester: Kalle Niederlassung der Hoechst AG, Federal Republic of Germany

3,987,719, Reexam. No. 90/000,023, Requested: July 10, 1981, Cl. 99/422, COOKING UTENSIL, Leonard Kian, Owner of Record: *Leonard Kian,* Attorney or Agent: Peter P. Price, Ex. Gp.: 240, Requester: Roy E. Hofer, Chicago, Ill.

Current Membership of Performance Review Board

This notice announces the current membership of the Performance Review Board for the Patent and Trademark Office. The original membership was announced in the Federal Register of Feb. 6, 1980 (45 FR 8083). Changes in membership were announced in the Federal Register of Aug. 5, 1980 (45 FR 51867) and Oct. 24, 1980 (45 FR 70537). Three of the persons whose appointments were previously announced are no longer serving as members of the PRB and two new members have been appointed. The current membership, excluding the three persons who no longer are members and including the two new members, is as follows:

Rene D. Tegtmeyer, Member, Assistant Commissioner for Patents, U.S. Patent and Trademark Office, Washington, D.C. 20231. Term—permanent.

Margaret M. Laurence, Member, Assistant Commissioner for Trademarks, U.S. Patent and Trademark Office, Washington, D.C. 20231. Term—permanent.

Richard J. Shakman, Member, Assistant Commissioner for Administration, U.S. Patent and Trademark Office, Washington, D.C. 20231. Term—permanent.

James O. Thomas, Jr., Member, Director, Patent Examining Group 140, U.S. Patent and Trademark Office, Washington, D.C. 20231. Term—expires Jan. 31, 1983.

Herbert C. Wamsley, Member, Director, Trademark Examining Operation, U.S. Patent and Trademark Office, Washington, D.C. 20231. Term—expires Jan. 31, 1983.

William Feldman, Member, Deputy Assistant Commissioner for Patents, U.S. Patent and Trademark Office, Washington, D.C. 20231. Term—expires Jan. 31, 1982.

Jere W. Sears, Member, Deputy Solicitor, U.S. Patent and Trademark Office, Washington, D.C. 20231. Term—expires Jan. 31, 1982.

Richard J. Wieland, (Outside) Member, Assistant General Counsel for Litigation, HQ National Aeronautics and Space Administration, Washington, D.C. 20546. Term—expires July 12, 1984.

The three persons who are no longer members of the PRB are:

Mr. Lucrelle F. Parker, former Deputy Commissioner, U.S. Patent and Trademark Office, Washington, D.C. 20231.

Mr. S. William Yost, former Assistant Commissioner for Finance and Planning, U.S. Patent and Trademark Office, Washington, D.C. 20231.

Mr. James R. Wright, National Bureau of Standards, Washington, D.C. 20234.

The new members of the PRB who have been appointed are:

Mrs. Margaret M. Laurence, Assistant Commissioner for Trademarks, U.S. Patent and Trademark Office, Washington, D.C. 20231.

Mr. Richard J. Wieland, Assistant General Counsel for Litigation, HQ National Aeronautics and Space Administration, Washington, D.C. 20546.

Persons desiring any further information about the membership of the PRB may contact Mr. Aaron W. Deitch, Personnel Officer, U.S. Patent and Trademark Office, Washington, D.C. 20231. Telephone (703) 557-2662.

GERALD J. MOSSINGHOFF,
Commissioner of Patents and Trademarks.

July 16, 1981

Service by Publication

A notice of opposition against the registration of the application serial number identified below having been filed, and the notice of such proceeding sent by mail to the applicant at the last known address having been returned by the Post Office as undeliverable, notice is hereby given that unless the applicant listed herein, its assigns or legal representatives, shall enter an appearance within thirty days from the date of this publication, the opposition will be proceeded with as in the case of default.

Girlz, Portland, O., Serial No. 230,977, Op. No. 64,339.

ERMA S. BROWN,
Deputy Clerk, Trademark Trial and Appeal Board.
For MARGARET M. LAURENCE,
Assistant Commissioner for Trademarks.

PATENT NOTICES

Certificates of Correction for the Week of Aug. 11, 1981

PP. 04,676	4,242,711	4,257,643	4,264,278
D. 258,519	4,244,743	4,257,673	4,264,421
3,544,980	4,244,897	4,257,901	4,264,562
3,665,434	4,246,152	4,257,994	4,264,672
3,733,592	4,246,347	4,258,009	4,264,737
3,923,439	4,247,099	4,258,077	4,264,824
3,931,318	4,248,938	4,258,078	4,264,991
4,023,065	4,249,006	4,258,231	4,264,998
4,069,462	4,249,159	4,258,286	4,265,619
4,071,554	4,249,165	4,258,764	4,265,735
4,118,584	4,249,516	4,258,836	4,265,745
4,122,282	4,250,100	4,258,858	4,265,818
4,124,601	4,250,139	4,258,923	4,265,874
4,126,754	4,250,394	4,258,985	4,265,919
4,151,351	4,250,547	4,259,281	4,265,974
4,156,090	4,250,725	4,259,297	4,266,461
4,157,441	4,250,763	4,259,644	4,266,480
4,200,845	4,251,572	4,259,727	4,266,730
4,207,725	4,251,652	4,260,218	4,266,842
4,213,733	4,251,735	4,260,420	4,267,074
4,213,862	4,253,149	4,260,546	4,267,168
4,216,141	4,253,774	4,260,783	4,267,748
4,220,117	4,254,113	4,261,144	4,267,778
4,220,561	4,254,248	4,261,540	4,268,422
4,223,157	4,254,663	4,261,855	4,268,491
4,224,562	4,255,180	4,262,073	4,268,515
4,229,409	4,255,650	4,262,131	4,269,172
4,230,038	4,255,783	4,262,256	4,269,387
4,230,463	4,256,113	4,262,785	4,269,535
4,230,751	4,256,267	4,263,126	4,269,541
4,230,978	4,256,400	4,263,158	4,269,713
4,231,758	4,256,749	4,263,282	4,270,196
4,233,082	4,256,872	4,263,330	4,271,169
4,235,822	4,257,137	4,263,626	4,271,278
4,236,025	4,257,175	4,263,633	4,271,526
4,237,315	4,257,529	4,263,970	4,271,949
4,239,667	4,257,552	4,264,244	
4,240,990	4,257,553	4,264,262	

Disclaimers

3,765,548.—*Charles C. Shivvers,* Corydon, Iowa. SWEEP AUGER STRUCTURE. Patent dated Oct. 16, 1973. Disclaimer filed June 15, 1981, by the inventor.

Hereby enters this disclaimer to claim 1 of said patent.

3,932,731.—*Glenn Ellis Moore, Jr.,* Murray Hill, N.J. CODE CONVERTER. Patent dated Jan. 13, 1976. Disclaimer filed June 15, 1981, by the assignee, *Bell Telephone Laboratories, Inc.*

Hereby enters this disclaimer to claims 1 and 13 of said patent.

4,058,769.—*Robert J. Alderman,* Ruskin, Fla. MODULATION SYSTEM WITH CARRIER CONTROL. Patent dated Nov. 15, 1977. Disclaimer filed June 10, 1981, by the inventor.

Hereby enters this disclaimer to claims 1–15 of said patent.

4,195,147.—*Kazys Sekmakas;* Palatine and *Raj Shah;* Schaumburg, Ill. PREPARATION OF CATIONIC AMINE-FUNCTIONAL COPOLYMERS. Patent dated Mar. 25, 1980. Dislcaimer filed May 29, 1981, by the assignee, *DeSoto, Inc.*

Hereby enters this disclaimer to claims 1–8 of said patent.

National Technical Information Service

U.S. GOVERNMENT-OWNED INVENTIONS

Notice of Availability for Licensing

The inventions listed below are owned by the U.S. Government and are available for domestic and, possibly, foreign licensing.

Copies of patents cited are available from the Commissioner of Patents and Trademarks, Washington, D.C. 20231, for $.50 each. Requests for copies of patents must include the patent number.

Copies of patent applications cited are available from the National Technical Information Service (NTIS), Springfield, Va. 22161 for $5.00 each ($10.00 outside North American Continent). Requests for copies of patent applications must include the patent application number. Claims are deleted from patent application copies sold to avoid premature disclosure. Claims and other technical data will usually be made available to serious prospective licensees upon execution of a non-disclosure agreement.

Requests for information on the licensing of particular inventions should be directed to:

Office of Government Inventions and Patents
U.S. Department of Commerce
P.O. Box 1423
Springfield, Va. 22151

DOUGLAS J. CAMPION,
Program Coordinator,
Office of Government Inventions and Patents
National Technical Information Service
U.S. Department of Commerce.

U.S. DEPARTMENT OF THE AIR FORCE

AF/JACP
1900 Half St., S.W.
Washington, D.C. 20324

Patent 4,249,823. Windscreen Angular Deviation Measurement Device. Filed Oct. 16, 1979. Patented Feb. 10, 1981. Not available NTIS.

Patent 4,251,741. High Power Pulser. Filed Feb. 8, 1979, Patented Feb. 17, 1981. Not available NTIS.

Patent 4,251,765. Aircraft Electrical System Tester. Filed Feb. 7, 1979. Patented Feb. 17, 1981. Not available NTIS.

Patent 4,251,786. Stepped-Rod Ferrite Microwave Limiter Having Wide Dynamic Range and Optimal Frequency Selectivity. Filed July 6, 1979. Patented Feb. 17, 1981. Not available NTIS.

Patent 4,252,937. Polyaromatic Ether-Keto-Sulfones and Their Synthesis. Filed June 8, 1979. Patented Feb. 24, 1981. Not available NTIS.

U.S. DEPARTMENT OF AGRICULTURE

Program Agreements and Patent Branch
Administrative Service Division Federal Building
Science & Education Administration
Hyattsville, Md. 20782

Patent 4,259,362. Process for Improving Baking Properties of Unbleached Flour. Filed Jan. 19, 1979. Patented Mar. 31, 1981. Not available NTIS.

U.S. DEPARTMENT OF ENERGY

Assistant General Counsel for Patents (GC–42)
1000 Independence Ave., NW.
Washington, D.C. 20585

Patent application 6–129,299. Drift Tube Suspension for High Intensity Linear Accelerators. Filed Mar. 11, 1980.

Patent 4,220,856. Method of Analysis of Asbestiform Minerals by Thermoluminescence. Filed Nov. 3, 1978. Patented Sept. 2, 1980. Not availabe NTIS.

Patent 4,221,186. Apparatus for Forming Targets. Filed Jan. 24, 1979. Patented Sept. 9, 1980. Not available NTIS.

Patent 4,221,610. Method for Homogenizing Alloys Susceptible to the Formation of Carbide Stringers and Alloys Prepared Thereby. Filed Feb. 24, 1978. Patented Sept. 9, 1980. Not available NTIS.

Patent 4,221,995. Linear Motor Drive System for Continuous-Path Closed-Loop Position Control of an Object. Filed July 24, 1978. Patented Sept. 9, 1980. Not available NTIS.

Patent 4,222,011. Stokes Injected Raman Capillary Waveguide Amplifier. Filed Oct. 3, 1978. Patented Sept. 9, 1980. Not available NTIS.

Patent 4,223,064. Alkali Metal Protective Garment and Composite Material. Filed May 10, 1979. Patented Sept 16, 1980. Not available NTIS.

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES

National Institutes of Health
Chief, Patent Branch
Westwood Building
Bethesda, Md. 20205

Patent application 6-227,166. Tick Cell Lines. Filed Jan. 22, 1981.

U.S. DEPARTMENT OF THE NAVY

Director, Navy Patent Program/
Patent Counsel for the Navy
Office of Naval Research
Code 302
Arlington, Va. 22217

Patent application 6-203,012. Louvre Buffer Fire Prevention System. Filed Nov. 3, 1980.

Patent application 6-216,460. Elastomeric Sway Bracing and Ejector System. Filed Dec. 15, 1980.

Patent application 6-230,187. A Holographic Optical Article and Process. Filed Feb. 2, 1981.

Patent application 6-230,201. Heterojunction-Diode Transistor EBS Amplifier. Filed Feb. 2, 1981.

Patent application 6-235,305. Polynitroethyl Thionocarbonates and Method of Preparation. Filed Feb. 17, 1981.

Patent 4,209,766. Transducer. Filed Sept. 15, 1964. Patented June 24, 1980. Not available NTIS.

Patent 4,215,428. Time Ratio Controlled Inverter. Filed Mar. 3, 1971. Patented July 29, 1980. Not available NTIS.

Patent 4,235,679. High Performance Solar Still. Filed Jan. 15, 1979. Patented Nov. 25, 1980. Not available NTIS.

Patent 4,239,012. Homing Torpedo Control Apparatus. Filed Dec. 15, 1960. Patented Dec. 16, 1980. Not available NTIS.

Patent 4,244,350. Solar Energy Heat-Storage Tank. Filed Mar. 26, 1979. Patented Jan. 13, 1981. Not available NTIS.

Patent 4,245,223. Self-Multiplexing Antenna Employing Orthogonal Beams. Filed May 2, 1977. Patented Jan. 13, 1981. Not available NTIS.

Patent 4,248,854. Production of Antibody Toward Asbestos and Immunoassay Therewith. Filed Aug. 27, 1979. Patented Feb. 3, 1981. Not available NTIS.

Patent 4,249,421. Method to Determine the Shear Absorption of a Rubberlike Material. Filed Oct. 22, 1979. Patented Feb. 10, 1981. Not available NTIS.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Assistant General Counsel for Patent Matters
NASA Code GP-4
Washington, D.C. 20546

Patent 4,014,798. Insoluble Polyelectrolyte and Ion-Exchange Hollow Fiber Impregnated Therewith. Filed Apr. 4, 1974. Patented Mar. 29, 1977. Not available NTIS.

Patent 4,211,354. Method for Alleviating Thermal Stress Damage in Laminates. Filed Apr. 6, 1978. Patented July 8, 1980. Not available NTIS.

Patent 4,227,096. Microwave Integrated Circuit for Josephson Voltage Standards. Filed Aug. 31, 1978. Patented Oct. 7, 1980. Not available NTIS.

Patent 4,229,182. Recovery of Aluminum from Composite Propellants. Filed Sept. 29, 1978. Patented Oct 21, 1980. Not available NTIS.

Patent 4,236,383. Solar Energy Receiver for a Stirling Engine. Filed Apr. 6, 1979. Patented Dec. 2, 1980. Not available NTIS.

Patent 4,239,057. Pressure Control Valve. Filed July 13, 1979. Patented Dec. 16, 1980. Not available NTIS.

Patent 4,240,256. Phase-Angle Controller for Stirling Engines. Filed Jan. 31, 1979. Patented Dec. 23, 1980. Not available NTIS.

Patent 4,240,601. Method for Observing the Features Characterizing the Surface of a Land Mass. Filed May 30, 1979. Patented Dec. 23, 1980. Not available NTIS.

Patent 4,241,308. Digital Numerically Controlled Oscillator. Filed Dec. 29, 1978. Patented Dec. 23, 1980. Not available NTIS.

Patent 4,242,498. Process for the Preparation of Fluorine Containing Crosslinked Elastomeric Polytriazine and Product So Produced. Filed Apr. 9, 1979. Patented Dec. 30, 1980. Not available NTIS.

Patent 4,244,857. Curing Agent for Polyepoxides and Epoxy Resins and Composites Cured Therewith. Filed Aug. 30, 1979. Patented Jan. 13, 1981. Not available NTIS.

Patent 4,245,085. The 1,2,4-Oxadiazole Elastomers. Filed Apr. 9, 1979. Patented Jan. 13, 1981. Not available NTIS.

Patent 4,246,001. Molten Salt Pyrolysis of Latex. Filed Apr. 27, 1978. Patented Jan. 20, 1981. Not available NTIS.

Patents Available for Licensing or Sale

D. 259,156. A ROCKABLE FOOTSTOOL. *Frank A. Massow.* Correspondence to *Hollis C. Hodson,* P.O. Box 114, Amo, Ind. 46103.

4,059,995. LEVEL INDICATORS FOR LIQUIDS. *Raul Calderon De Palacio.* Correspondence to *Jesse D. Reingold, Jacobs & Jacobs, P.C.,* 521 Fifth Ave., New York, N.Y. 10175.

4,136,764. MOTHER ALICE'S BREAD VENDING MACHINE. *Alice Johnson,* 8650 Belford Ave., #1, Los Angeles, Calif. 90045.

4,169,580. HYDRAULIC WINCH FOR SHIP-BOARD USE, Hatlapa Uetersener Maschinenfabrik GMBH, Germany. Correspondence to: *Michael Striker,* 360 Lexington Ave., New York, N.Y. 10017.

4,236,194. LIGHT APPARATUS FOR A PIVOTAL BOOM, *Raymond M. Norman,* Floodwood, Minn. 55736.

4,241,674. SUB-SOIL PLANTER. Mellinger Mfg. Co., *Michael R. Swartz,* R.D. #2 Willow St., Pittsburgh, Pa. 15235.

4,243,260. CONVERTIBLE BED FOR STANDARD PICK-UP TRUCK CAMPERS. *Darrell Gieseking,* P.O. Box 10963., St. Louis, Mo. 63135.

4,253,407. BURNER FOR COMBUSTING PARTICULATE FUELS. *Aronold Larson,* Box 595, Pagosa Springs, Colo. 81147.

4,255,872. AUDIOVISUAL INTERVIEW PORTFOLIO. *Eugene Williams, Sr.,* 6545 Quiet Hours T1, Columbia, Md. 21046.

4,268,612. METHOD FOR MAKING RELIEF DEEPENING IN PRINTINT PLATE MATERIALS. *Vaclav Misek,* 8515 Colonial Dr., Stockton, Calif. 95209.

4,278,067. FURNACE. *Clinton Badger Pike,* Correspondence to: *Marshall C. Gregory,* 2211 Park Blvd., P.O. Box 11398A, Palo Alto, Calif. 94386.

The following patents are offered by James D. Davidson, P.O. Box 1293, Pontiac, Mich. 48056.

4,267,666. SHUTTER SHIELDS.

4,254,999. DIE SHOES.

4,204,373. INSULATION TAPE.

3,137,258. DIE GAUGES.

General Electric Co. is prepared to grant non-exclusive licenses under the following patents upon reasonable terms to domestic manufacturers.

Applications for license may be addressed: Patent Counsel, General Electric Co., Re-Entry Systems Division, 3198 Chestnut St., Philadelphia, Pa. 19101.

4,193,866. FERRITE FLOCCULATING SYSTEM.

Applications for license may be addressed to Patent Counsel, Gas Turbine Division, General Electric Co., 1 River Rd., Bldg. 500, Room 218, Schenectady, N.Y. 12345.

4,246,757. COMBUSTOR INCLUDING A CYCLONE PREVAPORIZER AND COMBUSTION PROCESS FOR GAS TURBINES FIRED WITH LIQUID FUEL.

4,259,837. WATER AND STEAM INJECTION SYSTEM FOR EMISSION CONTROL OF GAS TURBINES.

4,245,959. WINDAGE NUT.

Applications for license may be addressed to Patent Counsel, Large Steam Turbine-Generator Division, General Electric Co., 1 River Rd., Schenectady, N.Y. 12345.

4,214,182. SUPPORT STRUCTURE FOR ARMATURE CONDUCTORS.

4,218,007. METHOD OF DIFFUSION BONDING DUPLEX SHEET CLADDING TO SUPERALLOY SUBSTRATES.

4,223,529. COMBINED CYCLE POWER PLANT WITH PRESSURIZED FLUIDIZED BED COMBUSTOR.

4,223,722. CONTROLLABLE INLET HEADER PARTITIONING.

4,224,461. UNGROUNDED THREE WIRE THERMOCOUPLE.

4,251,328. GALLIUM PLATING.

4,214,182. SUPPORT STRUCTURE FOR ARMATURE CONDUCTORS.

4,218,007. METHOD OF DIFFUSION BONDING DUPLEX SHEET CLADDING TO SUPERALLOY SUBSTRATES.

4,223,529. COMBINED CYCLE POWER PLANT WITH PRESSURIZED FLUIDIZED BED COMBUSTOR.

4,223,722. CONTROLLABLE INLET HEADER PARTITIONING.

4,224,461. UNGROUNDED THREE WIRE THERMOCOUPLE.

4,251,328. GALLIUM PLATING.

Application for license may be addressed to the General Electric Co., Division Patent Counsel, Housewares and Audio Business Division, 1285 Boston Ave., Bridgeport, Conn. 06602.

D. 250,690. STAND OR SIMILAR ARTICLE.

D. 245,060. GRANULAR COFFEE DISPENSER ATTACHMENT FOR A BEVERAGE MAKER OR SIMILAR ARTICLE.

D. 243,041. LOOKING GLASS OR SIMILAR ARTICLE.

D. 242,975. ELECTRIC BROILER GRILL OR SIMILAR ARTICLE.

D. 242, 891. ELECTRIC COFFEEMAKER OR SIMILAR ARTICLE.

D. 239,906. COFFEEMAKER LID OR SIMILAR ARTICLE.

D. 238,138. COFFEEMAKER SPOUT OR SIMILAR ARTICLE.

D. 227,571. PORTABLE ELECTRIC HEATER.

D. 222,862. DENTAL IRRIGATOR.

D. 221,826. HOLDER FOR AN ELECTRIC TOOTHBRUSH.

4,260,928. ELECTRO-ACOUSTIC TRANSDUCER WITH HORN AND REFLECTOR.

4,187,993. FOOD GRINDER.

4,190,762. ELECTROLYTIC IRON.

4,196,340. ELECTROLYTIC IRON.

4,210,068. BAG SEALER LID ASSEMBLY.

4,213,258. STEAM IRON WATER GAUGE.

4,225,775. HAIR DRYER.

4,239,322. POLARITY PROTECTOR.

4,101,089. INTEGRAL STORAGE ASSEMBLY FOR DETACHABLE POWER CORDS.

4,164,735. PIEZOELECTRIC AUDIBLE INDICATOR CIRCUIT.

4,196,406. ULTRASONIC CONTROL DEVICE.

4,197,524. TAP-ACTUATED LOCK AND METHOD OF ACTUATING THE LOCK.

3,475,899. RADIO AND ALARM CONTROL MECHANISM.

3,859,903. ELECTRIC OVEN TOASTER TOAST SERVER MECHANISM.

3,497,734. ELECTRO-MECHANICAL OSCILLATOR.

3,454,856. OSCILLATOR FOR A BATTERY OPERATED CLOCK.

3,460,188. VACUUM CLEANER.

3,365.743. VACUUM CLEANER LID LATCH CONSTRUCTION.

3,355,562. VACUUM CLEANER OPERATING SWITCH CONSTRUCTION.

3,344,588. VACUUM CLEANER.

3,334,372. SUCTION CLEANER HAVING IMPROVED HANDLE AND FILTER BAG MOUNTING.

3,308,247. AUTOMATIC CORD RETRACTOR FOR UPRIGHT FLOOR APPLIANCE.

3,291,540. LATCH FOR FLOOR POLISHER HANDLE.

3,257,680. ACCESSORY-HOLDING ARRANGEMENT FOR PORTABLE VACUUM CLEANERS.

Applications for license may be addressed to: Group Patent Counsel Major Appliance Business Group, General Electric Co., Appliance Park, Louisville, Ky. 40225.

3,627,442. BLOWER HOUSING.

3,990,272. WASHING MACHINE WITH IMPROVED ADDITIVE DISPENSING MEANS.

4,227,382. SPLIT SYSTEM AIR CONDITIONER ADAPTED TO RECEIVE A WATER PREHEATER.

4,229,945. HOUSEHOLD REFRIGERATOR AIR FLOW CONTROL AND METHOD.

4,233,498. POWER CONTROL FOR APPLIANCE USING HIGH INRUSH CURRENT ELEMENT.

4,233,819. AUTOMATIC ICEMAKER WITH SIMPLIFIED ICE PIECE EJECTION.

4,237,368. TEMPERATURE SENSOR FOR GLASS-CERAMIC COOKTOP.

4,237,919. DISHWASHER INLET AIR GAP.

4,241,289. HEAT SENSING APPARATUS FOR AN ELECTRIC RANGE AUTOMATIC SURFACE UNIT CONTROL.

4,241,337. APPLIANCE DOOR POSITION SENSOR ARRANGEMENT.

4,242,554. EFFECTIVE TIME RATIO BROWNING IN A MICROWAVE OVEN EMPLOYING HIGH THERMAL MASS BROWNING UNIT.

4,249,090. AUTOMATIC RESETTING POWER SAVER SWITCH FOR DISHWASHER.

4,250,719. HOUSEHOLD REFRIGERATOR HUMIDITY CONTROLLED PAN ASSEMBLY.

4,251,716. SELF-CLEANING GLASS-CERAMIC SURFACE COOKING UNIT.

4,254,450. LAMP ASSEMBLY FOR COMBINATION MICROWAVE OVEN AND EXHAUST VENT.

4,256,136. MECHANICALLY OPERATED LEVEL CONTROL FOR DISHWASHERS.

4,260,278. FASTENING ASSEMBLY.

Texasgulf, Inc. is prepared to grant non-exclusive licenses under the following patents upon reasonable terms. Please direct all correspondence to: Patent Counsel Texasgulf, Inc., High Ridge Park, Stamford, Conn. 06904

3,191,783. GRANULAR PRODUCT STORAGE.

3,199,955. PROCESS OF REDUCING SULFUR DIOXIDE TO ELEMENTAL SULFUR.

3,332,744. RADIOMETRIC METHOD FOR PLANT STEAM CONTROL IN POTASH AND PHOSPHATE RECOVERY PROCESS.

4,427,145. METHOD FOR AGGLOMERATING POTASSIUM CHLORIDE USING HYDROFLUORIC ACID OR METALLIC FLUORIDE.

3,442,553. SLURRY MINING OF CARNALLITE.

3,455,647. PROCESS FOR PRODUCING SODIUM SESQUICARBONATE AND SODA ASH FROM TRONA.

3,512,941. APPARATUS FOR PRODUCING NORMAL SUPERPHOSPHATE.

3,537,589. OUTSIDE DRIVE FOR A TILTING PAN FILTER.

3,595,624. METHOD AND APPARATUS FOR WASHING CRYSTALLIZERS.

3,655,538. PROCESS FOR ELECTROWINNING ZINC FROM SULFIDE CONCENTRATES.

3,674,442. CONTROL OF ORGANIC DEPOSITION IN SLURRY HEATERS IN POTASH CRYSTALLIZER CIRCUIT.

3,807,141. APPARATUS FOR REDUCING THE HYDROGEN SULPHIDE AND HYDROGEN POLYSULFIDE CONTENT OF LIQUID SULFUR.

3,810,542. PROCESS FOR REMOVING CHROMIUM FROM COOLING TOWER BLOWDOWN STREAMS.

3,920,424. LIQUID SULFUR GAS SCHUBBER APPARATUS.

3,989,607. SOLVENT EXTRACTION AND ELECTROWINNING OF ZINC AND COPPER FROM SULFATE SOLUTION.

4,049,514. ZINC HYDROMETALLURGICAL PROCESS.

4,063,933. PROCESS FOR THE TREATMENT OF COMPLEX LEAD-ZINC CONCENTRATES.

4,083,934. PROCESS FOR OBTAINING PURE ORTHOPHOSPHORIC ACID FROM SUPERPHOSPHORIC ACID.

4,158,043. PROCESS FOR PRODUCING SODA ASH FROM NATURAL ALKALI METAL CARBONATE-CONTAINING ORES.

4,177,067. RECOVERY OF SILVER, COPPER AND ZINC FROM PARTIALLY ROASTED PYRITE CONCENTRATE BY FERRIC SULFATE LEACHING.

4,202,667. IMPROVED PROCESS FOR THE SEPARATION OF INSOLUBLE MATERIALS IN THE PRODUCTION OF SODA ASH.

4,209,379. CATHODE STRIPPING SYSTEM.

4,225,342. TREATMENT OF ZINC PLANT LEACH RESIDUES FOR RECOVERY OF THE CONTAINED METAL VALUES.

4,240,826. PROCESS FOR THE RECOVERY OF ARSENIC AS A ZINC ARSENATE AND ITS UTILIZATION IN THE PURIFICATION OF ZINC PLANT ELECTROLYTES.

4,252,622. CONTINUOUS PROCESS FOR THE PURIFICATION OF ZINC PLANTS ELECTROLYTES USING COPPER ARSENATES.

4,268,088. SHORTWALL MINING OF TRONA.

4,269,867. METALLIZING OF A CORRODIBLE METAL WITH A PROTECTIVE METAL.

The RCA Corp. offers to grant nonexclusive licenses on reasonable terms and conditions under the patents listed below. Inquiries respecting licenses under RCA patent should be addressed to RCA Corp., Sr. Vice President, Licensing, 30 Rockefeller Plz., New York, N.Y. 10020

4,265,524. OPTICAL SCANNER WITH VARIABLE SCAN LINE ANGLE.

4,265,699. ETCHING OF OPTICAL FIBERS.

4,266,159. ELECTRON CURRENT COLLECTOR FOR FLAT PANEL DISPLAY DEVICES.

4,266,197. REMOTE CONTROL TV SUBCARRIER PHASE SHIFTER SYSTEM.

4,266,245. DIFFERENTIAL AMPLIFIER CURRENT REPEATER.

4,266,333. METHOD OF MAKING A SCHOTTKY BARRIER FIELD EFFECT TRANSISTOR.

4,266,334. MANUFACTURE OF THINNED SUBSTRATE IMAGERS.

4,266,784. VIDEO DISC CADDY HAVING DISC ENTRAPMENT.

4,266,785. STYLUS LIFTING/LOWERING ACTUATOR WITH IMPROVED ELECTRO MAGNETIC MOTOR.

4,267,257. METHOD FOR FORMING A SHALLOW SURFACE RELIEF PATTERN IN A POLY(OLEFIN SULFONE) LAYER.

4,267,487. REGULATED FILAMENT SUPPLY FOR HIGH-POWER TUBES.

4,267,519. OPERATIONAL TRANSCONDUCTANCE AMPLIFIERS WITH NONLINEAR COMPONENT CURRENT AMPLIFIERS.

4,267,527. RELAXATION OSCILLATOR.

4,267,528. RADIO FREQUENCY INTERFERENCE SUPPRESSION APPARATUS.

4,267,640. SYSTEM FOR ASCERTAINING MAGNETIC FIELD DIRECTION.

4,268,537. METHOD FOR MANUFACTURING A SELF-ALIGNED CONTACT IN A GROOVED SEMICONDUCTOR SURFACE.

4,268,866. PEAK-RESPONSE CONTROLLER FOR AVERAGE-RESPONDING AUTOMATIC IRIS.

4,269,616. TEMPERATURE INSENSITIVE FILTER FOR KINESCOPE ENVELOPES.

4,269,654. SILICON NITRIDE AND SILICON OXIDE ETCHANT.

4,270,101. RELAXATION OSCILLATOR HAVING SWITCHED CURRENT SOURCE.

4,270,104. PHASE EQUALIZER IN MICROWAVE TRANSMISSION LINE.

4,270,125. DISPLAY SYSTEM.

4,270,132. INFORMATION RECORD.

4,270,190. SMALL SIGNAL MEMORY SYSTEM WITH REFERENCE SIGNAL.

4,270,221. PHASELOCKED RECEIVER WITH ORDERWIRE CHANNEL.

Otis Engineering Corp. is prepared to grant licenses under the following patents upon reasonable terms. Address inquires to: Patent Attorney, Otis Engineering Corp., P.O. Box 34380, Dallas, Tex. 75234, Telephone (214) 323-3882.

3,454,029. SHUTTLE VALVE.

3,533,430. SHUTTLE VALVE.

3,654,962. CROSS-OVER VALVE.

3,756,260. VALVES (CROSS-OVER).

4,095,424. VARIABLE HYDRAULIC PUMP NONLINEAR CONTROL WITH CAM-ACTUATED, ADJUSTABLY-SEQUENCED SECONDARY CONTROL.

4,142,597. MECHANICAL DETENT JARS.

4,162,713. PLANETARY TRANSMISSION WITH HYDRAULIC ENGAGEMENT AND DISENGAGEMENT.

4,166,475. SAFETY COUPLING.

4,175,987. LOW ALLOY TEMPERED MARTENSITIC STEEL.

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The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

These patent collections are open to public use and each of the patent depository libraries, in addition, offers the publications of the patent classification system (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Depending upon the library, the patents may be available in microfilm, in bound volumes of paper copies, or in some combination of both. Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the patent depository libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Birmingham Public Library	(205) 254-2555
Arizona	Tempe: Science Library, Arizona State University	(602) 965-7607
California	Los Angeles Public Library	(213) 626-7555 Ext. 273
	Sacramento: California State Library	(916) 323-4572
	Sunnyvale Patent Library*	(408) 736-0795
Colorado	Denver Public Library	(303) 573-5152 Ext. 222
Delaware	Newark: University of Delaware	(302) 738-2238
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4519
Illinois	Chicago Public Library	(312) 269-2814
Louisiana	Baton Rouge: Troy H. Middleton Library Louisiana State University	(504) 388-2570
Massachusetts	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library & Information Center	(612) 372-6552
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 214, 215
Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(404) 472-3411
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7814
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 790-6291
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County Public Library	(513) 369-6969
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 242-7361 Ext. 258
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448-1321**
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3128
	University Park: The Pennsylvania State Libraries	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-7722 Ext. 224
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 528-2957
Texas	Dallas Public Library	(214) 748-9071
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

*Collection organized by subject matter.

**Call only between the hours of 10:00 a.m. and 5:00 p.m.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF June 27, 1981

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—D. E. TALBERT, Director ..... Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	4-29-80
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director ..... Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	10-11-79
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director .... Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthdontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	6-25-80
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director ..... Coating: Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	7-01-80
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director ..... Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	1-15-80
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—S. W. ENGLE, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	1-03-80
SPECIAL LAWS ADMINISTRATION, GROUP 220—KENNETH L. CAGE, Director ..... Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy, Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	10-01-79
INFORMATION TRANSMISSION, STORAGE, AND RETRIEVAL, GROUP 230—VACANT ..... Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	1-23-80
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—A. L. SMITH, Director ..... Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling.	6-08-79
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director ..... Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	3-28-79
DESIGN, GROUP 290—KENNETH L. CAGE, Director ..... Industrial Arts; Household, Personal and Fine Arts.	9-24-79
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director ..... Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	1-09-80
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—M. M. NEWMAN, Director ... Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	3-05-80
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. AEGERTER, Director ..... Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	9-13-79
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director ..... Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	10-22-79
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—G. M. FORLENZA, Director ..... Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Miscellaneous Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	3-19-79

Expiration of patents: The patents within the range of numbers indicated below expire during June 1981, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,134,981 to 3,139,621, inclusive

Plant Patents ..... Numbers 2,407 to 2,415, inclusive

REISSUES

AUGUST 11, 1981

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 30,701
BUTTON LOCKING DEVICE

Ben Williams, and George H. Miller, both of 3955 N. Murray Ave., Shorewood, Wis. 53211

Original No. 4,043,006, dated Aug. 23, 1977, Ser. No. 553,158, Mar. 17, 1975. Application for reissue May 15, 1978, Ser. No. 905,928

Int. Cl.[2] **A44B** *1/00, 1/18*

U.S. Cl. 24—90 R **13 Claims**

11. In the combination of a first fabric with a button permanently fastened thereto and a second fabric with a button hole for receiving said button therethrough and to expose such button beyond said second fabric whereby to releasably button the two fabrics together, the improvement for locking the two fabrics together notwithstanding release of the button from the button hole and comprising a flexible link, anchor means anchoring one end of the flexible link to one of said fabrics, the other end of the flexible link comprising a loop encircling the exposed button whereby to be retained by the button in the event that the button slips through the button hole and to link the two fabrics together notwithstanding release of the button from the button hole, said second fabric having an edge adjacent the button hole, said flexible link being looped over the edge of the second fabric from its connection to said anchor means to its loop encircling the exposed button.

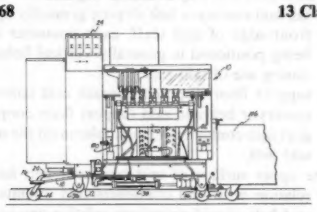
Re. 30,702
DOFFER WITH PNEUMATIC CONTROL SYSTEM

Alex J. Keller, 75 Ridgeport Rd., River Hills Plantation, Clover, S.C. 29710; Keith S. Dellinger, 1801 Hollandale; James L. Ray, 2235 Shaw Ave., both of Gastonia, N.C. 28052; Thomas A. Cherry, Rte. 5, Box 188, Mooresville, N.C. 28115, and Erhard A. Fechner, 3000 Whitson Rd., Gastonia, N.C. 28052

Original No. 4,081,949, dated Apr. 4, 1978, Ser. No. 763,662, Jan. 28, 1977. Application for reissue Oct. 29, 1979, Ser. No. 88,780

Int. Cl.[3] **D01H** *9/10*

U.S. Cl. 57—268 **13 Claims**



1. Apparatus for donning and doffing bobbins onto and off of the spindles of a spinning frame, said apparatus including:

(a) carriage means having transport means movable to a first position for causing said carriage to move along said spinning frame;

(b) bobbin donning and doffing means carried by said carriage means and arranged for initial movement to a first position at which at least one empty bobbin is donned onto a spindle and released, and for subsequent movement to a second position at which at least one full bobbin is doffed from a spindle;

(c) pneumatic sensor means disposed to emit a stream of air into the paths of movement of said transport means and said bobbin donning and doffing means, said sensor means generating first, second and third pneumatic signals each time said steam of air is interrupted by said transport means moving to said first position thereof, by said donning and doffing means moving to said first position thereof, and by said donning and doffing means moving to said second position thereof, respectively; and

(d) control means receiving said pneumatic signals and operable:

(i) to move said donning and doffing means to said first position thereof only after said first pneumatic signal has been received;

(ii) to move said donning and doffing means to said second position thereof only after said second pneumatic signal has been received; and

(iii) to move said transport means to said first position thereof only after said third pneumatic signal has been received.

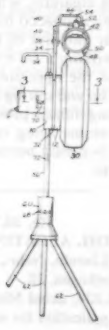
Re. 30,703
BALL THROWING DEVICE WITH ROTARY WHEEL, AND PAD MEANS FOR COMPRESSING A BALL AGAINST THE WHEEL

John K. Paulson, Lake Oswego, and Walter J. Steffan, Portland, both of Oreg., assignors to JoPaul Industries, Inc., Tualatin, Oreg.

Original No. 4,080,950, dated Mar. 28, 1978, Ser. No. 724,022, Sep. 16, 1976. Continuation-in-part of Ser. No. 554,920, Mar. 3, 1975, abandoned. Application for reissue May 29, 1979, Ser. No. 43,480

Int. Cl.[3] **F41B** *15/00*

U.S. Cl. 124—1 **8 Claims**



1. A ball throwing device, comprising:

a. a support assembly including a base member, and a support member mounted on the base member for rotation and about a horizontal axis and having at least one portion thereof [projection] *projecting* radially outward from the base member for 180° selective rotational adjustment about said horizontal axis to opposite vertical sides of said axis,

b. a rotary wheel having a ball-engaging surface, the wheel being mounted on the support assembly for rotation about an axis parallel to the said horizontal axis of rotational adjustment of the support member,

c. drive means engaging the wheel for rotating the ball-engaging surface thereof in a ball throwing direction at a speed predetermined to project a ball therefrom at a selected velocity,

d. a pad means mounted on the support member for rotation therewith about said horizontal axis, the pad means having a ball-engaging surface spaced radially from the ball-engaging surface of the wheel a distance slightly less than

the diameter of a ball to be thrown for compressing a ball against the wheel, and

e. means for supporting the base member for rotation about a vertical axis whereby to accommodate throwing of a ball in the same direction when the pad means is positioned above the wheel and when the pad means is positioned below the wheel

f. said rotary wheel [on] *or* pad means being mounted on said at least one radially projecting portion of the support member for adjustment to opposite vertical sides of said horizontal axis of rotation.

Re. 30,704

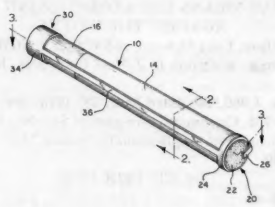
SELF-LIGHTING CIGARETTE HAVING A PROTECTIVE CAP

Lloyd M. Hughes, Chicago, Ill., assignor to Lloyd M. Hughes Enterprises, Inc., Chicago, Ill.

Original No. 3,994,305, dated Nov. 30, 1976, Ser. No. 599,367, Jul. 28, 1975. Application for reissue Jul. 29, 1977, Ser. No. 820,359

Int. Cl.³ A24D *1/08*

U.S. Cl. 131—351 **19 Claims**



1. A self-lighting cigarette, which comprises:

a cigarette having a tobacco filler surrounded by a wrapper;

means located at one end of the cigarette for igniting the cigarette by striking it on a surface; and

means located at the opposite, lip end of the cigarette for enclosing the lip end during ignition to prevent inhalation of the irritating fumes produced when the cigarette is ignited, said means being removable from the cigarette after ignition to permit normal inhalation during smoking of the cigarette.

Re. 30,705

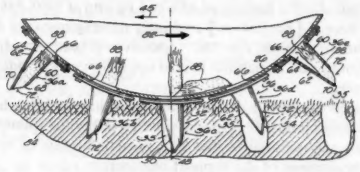
SOIL AERATING DEVICE

Charles E. Hines, Lincoln, Nebr., assignor to Outboard Marine Corporation, Waukegan, Ill.

Original No. 4,081,034, dated Mar. 28, 1978, Ser. No. 772,531, Feb. 28, 1977. Application for reissue Mar. 25, 1980, Ser. No. 133,800

Int. Cl.³ A01B *45/02*

U.S. Cl. 172—22 **33 Claims**



17. A core-forming tine for a soil aerating device including a hollow cyiindrical drum supported for rotation about a horizontally extending axis and for rolling travel along the surface of the ground or turf to be aerated and an outer wall including at least one aperture, said tine being adapted to be fixedly mounted on the exterior of the drum and to extend radially outwardly therefrom, said tine including a pair of generally V-shaped opposed and parallel side walls, each of said side walls having an apex, a trailing end portion, and a leading end portion having, adjacent said apex, a first part which terminates in a cutting edge segment, and a transverse trailing end wall connecting said trailing end portions of said side walls and cooperating with said side walls to define a hollow interior adapted to communicate with the drum aperture when said tine is mounted in the drum, said trailing end wall having a radially outermost end portion terminating in a cutting end segment which cooperates with said side wall cutting edge segments to form a generally U-shaped cutting edge having a bight located adjacent said side wall apexes.

Re. 30,706

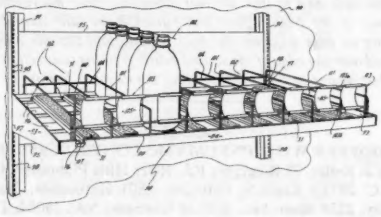
DISPLAY RACK WITH IMPROVED SHELF ASSEMBLY

Rafael T. Bustos, Clarkston, Ga., assignor to Leggett & Platt, Incorporated, Carthage, Mo.

Original No. 4,128,177, dated Dec. 5, 1978, Ser. No. 844,202, Oct. 21, 1977. Application for reissue Jun. 13, 1979, Ser. No. 48,276

Int. Cl.³ A47F *5/00*

U.S. Cl. 211—49 D **9 Claims**



1. A display rack with an improved shelf assembly that gravity feeds a column of containers one after another to the front edge of a shelf as that column's lead containers are successively removed by a customer, said display rack comprising

a conveyor belt disposed at an angle relative to the horizontal, said conveyor belt sloping generally upward from the front edge of said shelf, each container in said column being positioned in generally vertical fashion on said belt during use of said rack,

a support floor disposed beneath said conveyor belt, said conveyor belt and said support floor cooperating to support said containers in said column on the upper surface of said belt,

the upper surface of said conveyor belt having a friction relation with said containers that inhibits movement on said belt of said containers relative one to the other, and said support floor and the under surface of said conveyor belt having a friction relation with one another that allows movement of said belt over said support floor when said belt is at least partially loaded with containers and when not restrained against movement, said friction relationships being such that said belt can slide over said support floor while said containers remain generally stationary relative one to the other on said conveyor belt after removal of the column's lead container during use of said rack, and

a bumper rail disposed adjacent the front edge of said shelf, said conveyor belt conveying all of said containers in said column forward together toward said bumper in response to gravity on the remaining containers in said column after removal of the lead containers from said column, said conveyor belt and said container column being stopped by contact of the container in back of the lead container with said bumper rail, thereby positioning a new lead container adjacent the front edge of said shelf.

Re. 30,707

SAFETY BELT CLAMPING DEVICE

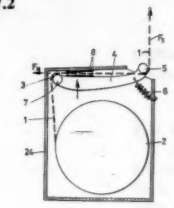
Heinz-Dieter Adomeit, Grolmanstrasse 16, 1 Berlin 12, Fed. Rep. of Germany

Original No. 4,120,466, dated Oct. 17, 1978, Ser. No. 789,607, Apr. 21, 1977. Continuation of Ser. No. 593,710, Jul. 7, 1975, abandoned. Application for reissue Jun. 22, 1979, Ser. No. 51,257

Claims priority, application Fed. Rep. of Germany, Jul. 9, 1974, 2432956

Int. Cl.[3] **A62B** *35/00;* **B65H** *75/48*

U.S. Cl. 242—107.2 **8 Claims**



5. A seat belt clamp apparatus comprising:

a housing;

a lever pivotably mounted in said housing, said lever having a clamping position and a non-clamping position with respect to a seat belt which is movable through said clamp apparatus;

means biasing said lever to its non-clamping position;

means responsive to a force above a predetermined amounted applied to said belt in a first direction to move said lever toward said belt to its clamping position against the force of said biasing means;

clamping means provided on said lever for clamping said belt to resist movement of said belt in said first direction in response to said force above a predetermined amount;

first and second opposite surfaces on said clamping means;

means on said first surface of said clamping means defining a planar contact area for contacting said belt, said first surface normally being out of contact with said belt; and

means for pivotably mounting said second surface of said clamping means on said lever, said second surface of said clamping means being pivotable with respect to said lever about a pivot axis directly opposite to said contact area, whereby said contact area is moved into substantially parallel engagement with the major plane of said seat belt in response to said force above a predetermined amount, thereby resisting movement of said belt in said first direction.

Re. 30,708

TELEPHOTO OBJECTIVE

Kikuo Momiyama, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Original No. 4,045,128, dated Aug. 30, 1977, Ser. No. 570,958, Apr. 22, 1975. Application for reissue Feb. 27, 1979, Ser. No. 15,754

Claims priority, application Japan, Apr. 25, 1974, 49-46920; Jun. 28, 1974, 49-74168

Int. Cl.[3] **G02B** *9/60*

U.S. Cl. 350—465 **25 Claims**

23. A telephoto objective of high speed adjustable focus comprising: a front lens group which has a positive power and remains stationary during focusing, and a rear lens group which is positioned on the image side of said front lens group and has a negative power, said rear lens group consisting of at least one stationary sub-group and a movable sub-group, said movable sub-group having a negative power and being axially movable to focus, wherein the absolute focal length of said stationary sub-group is larger than that of said movable sub-group.

PLANT PATENTS

GRANTED AUGUST 11, 1981

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,757

EUONYMUS PLANT—CORMAST VARIETY

Clifford D. Corliss, Ipswich, Mass., assignor to The Conard-Pyle Company, West Grove, Pa.

Filed May 19, 1980, Ser. No. 150,962

Int. Cl.[3] **A01H** *5/12*

U.S. Cl. Plt.—63 **1 Claim**

1. A new and distinct variety of *Euonymus fortunei* which is a branch mutation of the Emerald'N Gold variety, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of:

(a) a distinctly dwarf habit of growth rendering the plant suitable for use as a semi-prostrate ground cover,

(b) smaller variegated leaves which when mature are dark green with light to medium yellow margins,

(c) vigorous growth characteristics,

(d) the ability to thrive under a wide range of climatic conditions, and

(e) the ability to be sheared within prescribed limits or shaped to a specific form.

PATENTS

GRANTED AUG. 11, 1981

ERRATA

For CLASS	See PATENT NO
411–303	4,282,913
210–448	4,283,289
210–643	4,283,290
564–189	4,283,350
564–189	4,283,351
568–311	4,283,352
369–032	4,283,777

PATENTS

GRANTED AUG. 11, 1981

ERRATA

PATENTS

GRANTED AUGUST 11, 1981

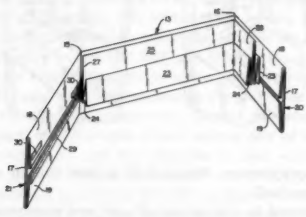
GENERAL AND MECHANICAL

4,282,607

DISPOSABLE-TYPE CAP WITH PULL-OUT CROWN

James E. Randall, Worthington, Ohio, assignor to Kap & Kor, Inc., Cleveland, Ohio

Filed Feb. 20, 1980, Ser. No. 122,874
Int. Cl.³ A42B *1/22*
U.S. Cl. 2—197 **2 Claims**



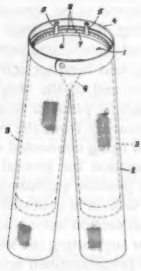
1. In a disposable cap having a headband formed with inner and outer side surfaces, that improvement which comprises a crown consisting of a rectangular, flexible sheet having opposite side and end edges and folded longitudinally on itself to define a pair of outer side panels, a plurality of intermediate pleats and a pair of peak-forming panels, the outer side panels of said crown being secured to the inner side surfaces of said headband and the intermediate pleats and peak-forming panels of said crown being adjustable between relatively elevated and retracted positions with respect to said headband to vary the crown style of the cap; and means securing the end edges of the peak-forming panels only of said sheet to one another.

4,282,608

LINER FOR TROUSERS OR SKIRT

Eduard Amberg, Birsigstr. 107, 4054 Basel, Switzerland

Filed Sep. 18, 1979, Ser. No. 76,563
Claims priority, application Fed. Rep. of Germany, Sep. 19, 1978, 2840639
Int. Cl.³ A41D *1/06*
U.S. Cl. 2—227 **3 Claims**



1. In a garment for the lower body provided with a liner removably fitted thereinto, said liner having a trunk portion including a waistband provided with substantially coextensive ribbon means internally attached thereto at peripherally spaced locations to form a multiplicity of intervening loops, said garment being internally provided at waist level with a plurality of generally vertical flexible straps having a free end engageable with its opposite end for holding said liner in position by closing said straps upon themselves,

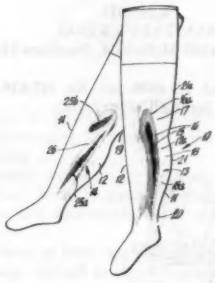
the improvement wherein said straps are attached to said garment at points above the upper edge of said waistband and overhang said upper edge on engaging said loops, said straps having a width less than the peripheral length of said loops, the number of said loops being substantially greater than that of said straps for facilitating selective peripheral adjustment of said liner relatively to said garment.

4,282,609

APPEARANCE MODIFYING PANTY HOSE

Betty Freedman, and Anne M. Blevins, both of New York, N.Y., assignors to Concepts for Women, Inc., New York, N.Y.

Filed Oct. 25, 1977, Ser. No. 844,530
Int. Cl.³ A41B *11/00*; A43B *17/00*
U.S. Cl. 2—239 **13 Claims**



1. A hose comprising a fabric formed so as to closely fit the leg of the wearer, said fabric having a first shaded area and a second shaded area circumscribing the first shaded area, said shaded areas being differently shaded from each other, and wherein the first shaded area is in the calf region between the front and rear, wherein the first shaded area is on the fabric portion covering the outside of the leg and further comprising a third shaded area, and a fourth shaded area circumscribing the third shaded area, said third and fourth shaded areas being differently shaded from each other, and wherein the third shaded area is in the calf region between the front and rear and being disposed on the portion covering the inside of the leg, and whereas the first area is spacedly disposed from said third area, and wherein said areas are differently contoured along the length of the hose, whereby the combination of areas provides an appearance of modifying the shape to the legs.

4,282,610

PROTECTIVE HEADGEAR

Carl J. Steigerwald, Wauconda, and Frank K. Villari, Oak Park, both of Ill., assignors to The Kendall Company, Boston, Mass.

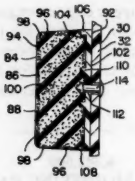
Continuation of Ser. No. 869,568, Jan. 16, 1978, abandoned. This application Dec. 4, 1978, Ser. No. 966,534
Int. Cl.³ A42B *3/00*
U.S. Cl. 2—414 **9 Claims**

1. A protective headgear, comprising:

a helmet; and

a pad assembly having a back surface, a front surface, and side surfaces connecting said back and front surfaces, said pad assembly comprising a pad of foam material having an integral molded densified layer defining said front surface and at least a substantial part of said side surfaces, said layer being of one-piece construction with the remainder of the pad and forming a tear-resistant cover for the front and sides of said pad assembly, and a relatively rigid uniplanar attachment plate bonded by molding to said pad

adjacent the back surface of the pad assembly and having means for securing the plate to the helmet, said plate being



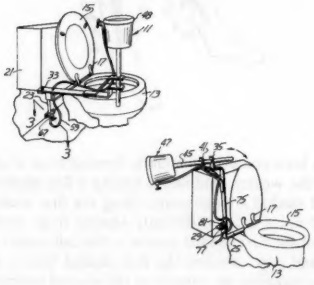
embedded in and encased by the pad, said means for securing the plate to the helmet extending through the pad, between the plate and the helmet.

4,282,611

SANITARY URINAL

Gerald L. O'Day, 24160 McDonald, Dearborn Heights, Mich. 48125

Filed Jul. 11, 1980, Ser. No. 167,616
Int. Cl.³ A47K *11/00*
U.S. Cl. 4—144.1 **13 Claims**



1. A sanitary urinal adapted for attachment to a toilet bowl having a pair of seat anchor bolts;

a bracket arm apertured at one end to receive said bolts for securing said arm to said bowl, with its other end extending laterally thereof;

a swing arm at one end pivotally connected to and supported upon said other end of said bracket arm;

a funnel having an elongated depending drain stem overlying said arm with its stem adjustably secured to the other end of said swing arm;

said swing arm and funnel having a non-use position and adapted for movement relative to said bracket arm for registry of said drain stem with said bowl.

4,282,612

ADJUSTABLE SHOWER AND MASSAGE APPARATUS

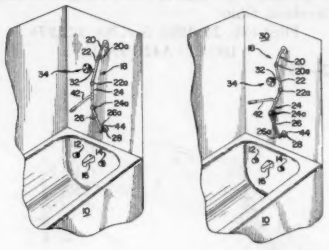
Joseph L. King, 452 Bay Wood Dr., Newport Beach, Calif. 92660

Filed Apr. 28, 1980, Ser. No. 144,774
Int. Cl.³ A47K *3/22*
U.S. Cl. 4—601 **6 Claims**

1. In combination, an adjustable shower and massage apparatus adapted to be attached to a suitable water system having a discharge end, the apparatus comprising:

a plurality of pipe members adapted to be flexibly interconnected, and wherein there is a leading pipe member connected to the discharge end of said water system and a trailing pipe member affixed to a stationary structure such as a wall;

geniculating means provided for interconnecting said pipe members to allow each respective pipe member to be individually positioned with respect to its adjoining pipe member;



a water-spray means mounted to at least one of said pipe members; and

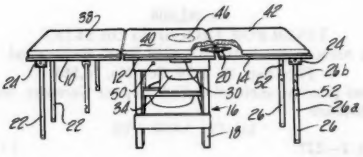
means secured to at least one of said pipe members to position and arrange said pipe members and said water-spray means, in order to provide a selective angular discharge of water through said water-spray means.

4,282,613

CONVERTIBLE INVALID BED

Anthony E. Violante, 5058 Chatsworth Ave., Detroit, Mich. 48224

Filed Dec. 31, 1979, Ser. No. 108,520
Int. Cl.³ A616 *7/02*
U.S. Cl. 5—90 **7 Claims**



1. An invalid bed adapted to be converted into an upright commode seat comprising, three mattress supporting sections which include a rear head section, an intermediate seat section and a front foot section; said head section being connected at its front end to the rear end of the seat section for pivotal movement from a horizontal position to a position extending generally vertically upwardly from the rear end of the seat section, said foot section being connected at its rear end to the front end of the seat section for pivotal movement from a horizontal position to a position extending downwardly from the front end of the seat section in a substantially vertical plane, a rigid frame for said seat section having legs fixed to the front and rear ends thereof for supporting the seat section in a stable horizontal position at a predetermined height above the floor surface, a first pair of laterally spaced support legs pivotally connected at their upper ends adjacent the rear end of the head section, said last-mentioned legs when in upright position supporting the head section in horizontal alignment with the seat section and being pivotable from said upright position to a collapsed position underlying and nested against the underside of the head section when the head section is pivoted to said vertically upwardly extending position, a second pair of supporting legs pivotally connected at their upper ends adjacent the front end of the foot section, said second pair of legs when in an upright position supporting the foot section in horizontal

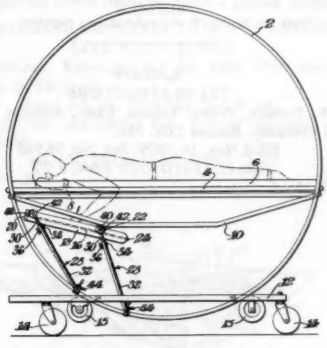
alignment with the seat section and being pivotable from said upright position to a collapsed position underlying and nested against the underside of the foot section when the foot section is pivoted to said vertically downwardly extending position, said foot section having a length no greater than the length of the legs supporting the seat section to enable pivoting said foot section to said vertically downwardly extending position, said head and foot sections being of generally the same length and said seat section being of shorter length so that, when the head section is pivoted to said upwardly extending position and said foot section to said downwardly extending position, the head section forms a backrest for an invalid seated in an upright position on said seat section with his legs overhanging the front end of the seat section, said seat section having a commode opening therein disposed to generally underlie the buttocks of an invalid lying in the bed and said frame having means for supporting a receptacle directly below said opening, a closure member for said opening disposed on the underside of said seat section and slideable transversely thereof to open and close said opening, the pivot axis of said second pair of legs extending transversely of said foot section so that, when the foot section is pivoted to said downwardly extending position, the last-mentioned legs extend vertically upwardly from the lower front end of the foot section and including means for foreshortening the length of said second pair of legs to enable them to be pivoted to said collapsed position when the foot section is pivoted to said vertically downwardly extending position.

4,282,614

TABLE FOR USE WITH END-FOR-END ROTATABLE HOSPITAL BED

Howard B. Hurst, 122 Carlie Rd., Lynnfield, Wilmington, Del. 19803

Filed Nov. 16, 1979, Ser. No. 94,829
Int. Cl.³ A61G *7/10*
U.S. Cl. 5—507 **8 Claims**



1. A versatile table for use in conjunction with an end-to-end rotatable hospital bed and being adjustable to virtually any position above, below or adjacent to a patient using said bed, said table comprising:

(a) a table surface, generally rectangular or square, having adjustably affixed near each corner thereof,

(b) a telescoping support member, each telescoping support member having means for adjusting its length and for fixing its length at a desired position, each such support member having at its end opposite said table,

(c) adjustable clamping means which can be affixed to the rails or other support bars of said rotatable bed, and having

(d) side and back boards affixed to said table surface substantially perpendicular to said surface and extending along the sides and back of said table surface and extending above and below said table surface to keep objects from falling therefrom, and

(e) at least one ledge on at least one side thereof to support a book and the like,

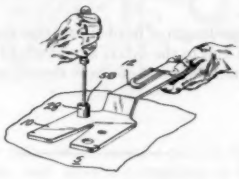
thereby providing an infinitely adjustable table for use by a patient on said bed.

4,282,615

CARPENTER'S SURFACE PROTECTING TOOL

Dale M. Tom, Rte. 1, Norwich, Ohio 43767

Filed Mar. 13, 1979, Ser. No. 20,959
Int. Cl.³ B25F *1/00*; **B25C** *3/00*
U.S. Cl. 7—164 **7 Claims**



1. Apparatus for protecting a surface into which fasteners are driven, comprising an integral piece of impact-resistant plastic including:

a shield portion having a flat under-surface adapted to be disposed on the surface to be protected;

a handle portion operatively connected to said shield portion;

means defining at least one opening in said shield portion that is large enough to accommodate the head of a nail;

means defining a screw-receiving opening in said shield portion, and including a tubular member upstanding from said shield portion and said screw-receiving opening and surrounded by said shield portion, said tubular member having interior dimensions great enough to receive a screwdriver blade therein to guide a screwdriver as it drives a screw into a surface on which said shield portion is disposed;

said shield portion having an upper-surface opposite said under-surface, said upper-surface being flat except for said tubular member; and

an intermediate portion interconnecting said handle portion and said shield portion, said intermediate portion making a positive acute angle with both said shield and said handle portions, and so that a plane containing said handle portion is closer to said shield portion upper-surface than under-surface, and so that said handle portion makes a small positive angle with respect to a plane extending parallel to said shield portion.

4,282,616

RIGID COLLAPSIBLE BOAT

Ronald Battershill, 4248 Palo Verde, Lakewood, Calif. 90713

Filed May 23, 1979, Ser. No. 41,549
Int. Cl.³ B63B *7/00*
U.S. Cl. 9—2 C **6 Claims**

1. A collapsible boat comprising:

a plurality of rigid hull sections hinged together along edges which meet in mating curves to form a hull prow and which extend longitudinally throughout the hull length and which are hinged together by means of flexible cord laced through mating apertures therein,

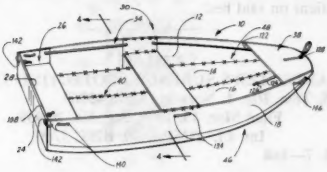
flexible, water tight sealing strips that extend along said hinged edges,

a flexible water tight stern panel that is fastened to stern ends of said hull sections in watertight engagement therewith,

a stern thwart having a transom reinforcing back for positioning against said flexible stern panel,

a midthwart having an upright panel for positioning in contact with said hull sections,

a bow thwart extending across bow ends of said hull sections,



and a single length of flexible cord that passes along one side of said hull to the other, laced to hold said stern thwart, said midthwart, and said bow thwart to said hull sections.

4,282,617

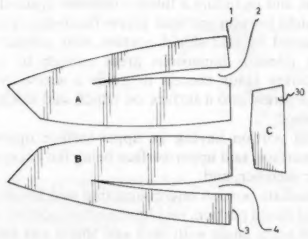
BOAT HULL, MATERIAL OR BLANK FOR A BOAT HULL, AND A METHOD OF PRODUCING A BOAT HULL

Claes Ö. S. Lundström, Järvstigen 9, S-17177, Solna, Sweden

Filed Jun. 16, 1978, Ser. No. 916,061

Int. Cl.³ B63B *3/00, 5/00*

U.S. Cl. 9—6 R **27 Claims**



1. In a boat hull which comprises at least one relatively stiff but flexible sheet which is bent to form the body or shell and the bottom of the hull and which also forms the broadest part of the hull after being bent and formed,

the improvement wherein:

said at least one sheet has at least one first slot extending from one outer edge of the sheet towards the center-line of the boat hull, said at least one first slot having opposing first edges and being in the part of said at least one sheet forming the broadest part of the hull;

said at least one sheet has elongated second slots generally extending in the direction of or parallel to said center-line, the opposing edges of said second slots being joined together along the lengths thereof to form respective ends of said second slots;

said first edges of said at least one first slot merge, at a distance from said outer edges of said at least one sheet, into at least one of said elongated second slots; and

said elongated second slots are provided, at their ends, with enlargements or holes (**25**) to remove stress concentrations when the sheet is bent, which enlargements or holes are filled in after forming of said hull.

4,282,618

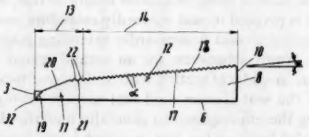
DIE FOR CUTTING SCREW-THREADS

Rudolf Wagner, Stuttgart, Fed. Rep. of Germany, assignor to Rems-Werk Christian Föll und Söhne GmbH & Co., Waiblingen, Fed. Rep. of Germany

Filed Jul. 18, 1979, Ser. No. 58,507

Int. Cl.³ B23G *5/08*

U.S. Cl. 10—111 **13 Claims**



1. A die for cutting external taper screw threads into tapered ends of externally ribbed steel for reinforcing concrete with an external thread-cutting machine to which the die is operatively connectible, said die comprising:

a cutting portion of finite length and having a plurality of first cutting teeth arranged in a cutting plane, said cutting plane having a finite length measured in the longitudinal direction of said die, said first cutting teeth having a tooth depth increasing within said cutting plane rearwardly to final depth; and

a guide portion adjacent said cutting portion, said guide portion having a predetermined length measured in the longitudinal direction of said die and having a plurality of second cutting teeth arranged in a guide plane, said predetermined length of said guide portion corresponding to about 3 to about 6 times the magnitude of said infinte length of said cutting portion, and said predetermined length of said guide portion being of from about ten to about twenty times the magnitude of said finite length of said cutting plane, said second cutting teeth in said guide portion having a constant tooth depth corresponding to the final tooth depth in said cutting portion.

4,282,619

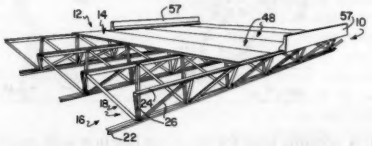
TRUSS STRUCTURE

Craig E. Rooney, Prairie Village, Kans., assignor to Havens Steel Company, Kansas City, Mo.

Filed Nov. 16, 1979, Ser. No. 94,955

Int. Cl.³ E01D *9/00;* **E04C** *3/02*

U.S. Cl. 14—6 **13 Claims**



1. In a bridge structure:

an elongated, spanning deck including a reinforced concrete layer;

at least four individual carrier truss structures, each including

an elongated lower chord element formed of metallic angle and presenting a pair of elongated, generally planar, interconnected flanges;

a plurality of individual, upwardly extending metallic web members;

means including first weld joints joining said web members to said lower chord element at spaced locations along the element,

respective adjacent web members converging and meeting at points above said lower chord element; and

means including second weld joints at said points coupling respective pairs of converged web members and defining a plurality of spaced apart panel points along the length of the carrier truss structure;

means operably interconnecting respective pairs of said truss structures to present at least two generally V-shaped in cross-section truss assemblies each having the lower chord elements of two truss structures in juxtaposed relationship, and the web members joined to each lower chord element extending obliquely upwardly therefrom, said interconnecting means including bolt means coupling each pair of juxtaposed lower chord elements at spaced locations therealong to form a composite lower chord for each truss assembly,

said V-shaped truss assemblies being oriented beneath said deck in side-by-side relationship with the composite lower chord of each assembly extending along the direction of span of the bridge structure and with said web members extending upwardly toward said deck;

means compositing said deck and truss assemblies, including a plurality of metallic force-transmitting elements embedded in said concrete layer and having mechanical interlock structure above the lower surface of said concrete and embedded therein; and

means operably coupling said force-transmitting elements and web members therebeneath, including force-transmitting third weld joints at the regions of at least certain of said panel points.

4,282,620

JOINT BRIDGING CONSTRUCTION FOR BRIDGES OR LIKE STRUCTURES

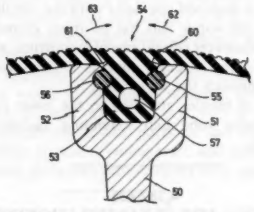
Alfred Hartkorn, Kolpingstrasse 25, 8068 Pfaffenhofen-Ilm, Fed. Rep. of Germany

Filed Jul. 30, 1979, Ser. No. 61,681

Claims priority, application Fed. Rep. of Germany, Aug. 4, 1978, 2834361

Int. Cl.³ E01D *19/06*; E01C *11/02*

U.S. Cl. 14—16.5 **6 Claims**



1. In a joint bridging construction for bridges or like structures where sealing bodies which are flush with the upper side of the roadway and are attached into recesses between upwardly extending walls in edge beams, the improvement comprising a longitudinal recess along at least one of said upwardly extending walls; a mirror image and facing longitudinal recess extending along said sealing body; a dowel part sized to snugly fit into both of said longitudinal recesses; and a longitudinal cut in said sealing body above said sealing body longitudinal recess, and adjacent the top edge of said upwardly extending wall.

4,282,621

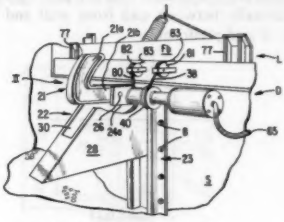
RELEASABLE LOCKING DEVICE

Charles Anthony, Milwaukee, and Charles A. Portz, Wauwatosa, both of Wis., assignors to Rite-Hite Corporation, Cudahy, Wis.

Filed Dec. 11, 1978, Ser. No. 967,899

Int. Cl.³ E01D *1/00*

U.S. Cl. 14—71.1 **15 Claims**



1. A device for releasably securing a parked vehicle to an adjacent structure, said device comprising a first means hingedly mounted for movement between an operative mode and an inoperative mode and adapted to normally assume an inoperative mode, said first means, when in an operative mode, having a distal portion thereof adapted to interlockingly engage the vehicle and substantially restrain movement thereof away from the adjacent structure and, when in an inoperative mode, having said distal portion assume a vehicle-release position; second means operatively connected to said first means for controlled movement thereof from an inoperative mode to an operative mode; third means for automatically locking said first means in an operative mode, said third means including an adjustable assembly for effecting controlled unlocking of said first means; and a carriage having a first section on which said first means and said third means are mounted and a second section mountable on the adjacent structure.

4,282,622

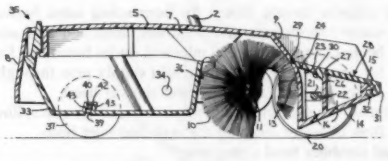
FLOOR SWEEPER WITH INTEGRAL HOUSING

Henry J. Rosendall, and Arlan J. Shaffer, both of Grand Rapids, Mich., assignors to Bissell, Inc., Grand Rapids, Mich.

Filed Dec. 13, 1979, Ser. No. 99,555

Int. Cl.³ A47L *11/00*

U.S. Cl. 15—41 R **12 Claims**



1. In a floor sweeper having a handle and a bail attached to said handle, a lower sweeping unit attached to said bail and comprising:

(a) housing of integrally molded relatively rigid plastic material and with said housing having a top and downwardly depending peripheral end and rear walls,

(b) a cylindrical rotary brush extending transversely between said end walls,

(c) a housing front wall depending downwardly from the front edge of said top and with said front wall being set back from the front end of the lower unit,

(d) said front wall being at least partially curved to form a dust deflector disposed just forwardly of said brush,

(e) a platform integral with the lower end of said front wall and extending forwardly therefrom to form an edge at the

front of the housing, said edge being disposed substantially below the plane of said top,

(f) said front wall and platform forming a transversely extending upwardly facing channel,

(g) running wheels disposed at the front end of said housing,

(h) a transverse axle joining said wheels and extending through said channel,

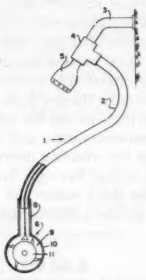
(i) and a removable protective channel cover of resilient material disposed below said top and extending generally horizontally between said front wall and the said front edge of said platform.

4,282,623

SCRUBBER APPARATUS

Delancey J. Gacuzana, 1310 Punahou St.#205, Honolulu, Hi. 96826

Filed Apr. 3, 1979, Ser. No. 26,518
Int. Cl.[3] A46B *13/06*; A61H *33/00*
U.S. Cl. 15—97 R **13 Claims**



1. Scrubber apparatus, comprising

a scrubber head having a portion formed for manual grasping and a rotatable scrubbing element,

inlet and outlet hoses connected at one end to said scrubber head,

an adaptor having means for connecting same between a water supply pipe and a shower head and said adaptor being connected to said inlet and outlet hoses and formed for channelling water from said supply pipe through said outlet hose and thence to said shower head,

control valve means in said scrubber head for controlling the flow of water entering through said inlet hose,

said scrubber head comprising:

a housing formed to provide an inlet passage from said inlet hose,

and an impeller disc positioned in said housing for receiving water from said inlet passage and formed for rotation by such water,

said housing being formed to provide an outlet passage from said impeller disc to said outlet hose,

said control valve means comprising:

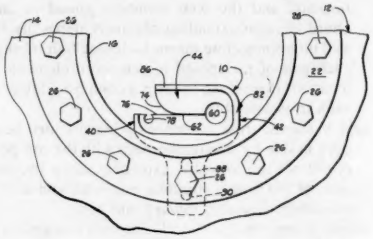
a multiple position valve formed for selectively communicating said inlet hose which said inlet passage and with said outlet hose directly, whereby in a first position of said multiple position valve the flow of water rotates said impeller disc and in a second position of said multiple position valve the flow of water bypasses said impeller disc.

4,282,624

OIL FIELD STORAGE TANK ATTACHMENT FOR CLEANING

James R. Cobb, 1449 Williams Cir., Oklahoma City, Okla. 73119

Filed Oct. 22, 1979, Ser. No. 87,407
Int. Cl.[3] B08B *11/00*
U.S. Cl. 15—210 B **4 Claims**



1. A measuring tape cleaning apparatus for a tank used for storing a liquid, said tank having an aperture formed through the top thereof for admitting a plumb bob attached to one end of a measuring tape into the tank for measuring the depth of liquid in the tank, comprising:

a wiper constructed of an elastomeric material, said wiper having opposed top and bottom surfaces and a cut, communicating with one side of the wiper, formed through the wiper to intersect the top and bottom surfaces thereof, whereby abutting first and second wiper faces accessable from said one side of the wiper are formed internally of the wiper and extend between the top and bottom surfaces of the wiper, wherein the cut formed through the wiper terminates within the wiper at a circular aperture formed through the wiper to intersect the top and bottom surfaces thereof;

a wiper support secured to the wiper, the wiper support adapted for mounting on portions of the tank adjacent the aperture formed through the top thereof so as to align the cut in the wiper with portions of said aperture at one side of said aperture and so as to orient the wiper faces substantially vertically; and

a brush assembly adjacent the top of the wiper, said brush assembly comprising:

a circular tube having a slit formed in the wall thereof, said slit extending between the ends of the tube, wherein the tube is disposed coaxially with the circular aperture through the wiper and has an inner diameter greater than the diameter of said circular aperture, and wherein the slit in the circular tube is aligned with the cut formed through the wiper; and

a plurality of bristles attached to the inner periphery of said circular tube and extending radially inwardly therefrom.

4,282,625

SCRAPING TOOL FOR CLEANING COOKING GRILLS

Robert L. Hulett, 901 Tenlynn Ct., St. Louis, Mo. 63124

Filed Mar. 10, 1980, Ser. No. 129,028
Int. Cl.[3] A47L *14/00*
U.S. Cl. 15—236 R **6 Claims**

1. A cooking grill scraper, comprising

a pair of normally substantially parallel rod members of generally circular cross-section,

the pair of rod members extending aft in a plane, and further comprising means to join the aft portions of the rod members,

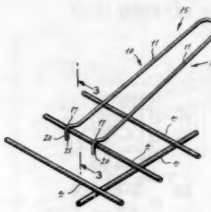
whereby to form a handle,

each of said pair of rod members having, forward of the

handle, a scraper portion projecting angularly in a plane substantially perpendicular to the plane of the handle,

each scraper portion characterized by having

a flat inner face on its side opposed to the other scraper portion, and having



a flat aft face on its side adjacent to the handle,

the flat inner and aft faces of each scraper portion intersecting in a cutting edge.

4,282,626

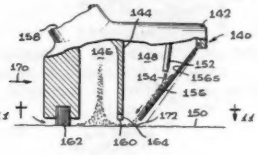
CLEANING DEVICES

Horst W. Schneider, West Covina, Calif., assignor to California Institute of Technology, Pasadena, Calif.

Division of Ser. No. 842,417, Oct. 17, 1977, Pat. No. 4,197,610. This application Aug. 6, 1979, Ser. No. 64,137

Int. Cl.³ A47L *7/00*

U.S. Cl. 15—320 **3 Claims**



1. Apparatus for applying a liquid to a surface comprising:

a housing having walls forming a hollow space and a wall dividing said space into two hollow regions with open lower ends for facing the surface;

means for applying a vacuum to a first of said regions;

means for slightly spacing at least a lower end of said dividing wall slightly from the surface when the housing assumes a predetermined upright position with respect to the surface; and

means for applying a fluid to a predetermined wall of a second of said hollow regions which is spaced from said dividing wall, said predetermined wall being inclined so that progressively lower portions thereof are progressively closer to said dividing wall, and said dividing wall being easily deflected and resilient so it can vibrate.

4,282,627

LARGE CLEARANCE FAIRLEAD GROMMET

James W. Downing, Buena Park, Calif., assignor to McDonnell Douglas Corporation, Long Beach, Calif.

Filed Dec. 18, 1978, Ser. No. 970,356

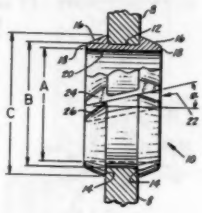
Int. Cl.² B65D *7/48;* **F16L** *5/00*

U.S. Cl. 16—2 **9 Claims**

1. A fairlead grommet for an aircraft control cable comprising:

a generally cylindrical body with frustro conically shaped flanges disposed longitudinally at the distal ends of said cylindrical body, oriented with the smaller diameter at the distal end and said cylindrical body having a longitudinal through-bore, centrally disposed with respect to the cylindrical body;

a through-slot generally longitudinally formed through said cylindrical body and extending the length thereof between said distal ends from the outer diameter of said flanges into communication with said bore, said through-slot, when viewed in a plane perpendicular to the horizontal axis of said bore, forms an angle with a radius line drawn from the center of said through-bore and said slot



is further oriented to form an angle with the horizontal axis of said through-bore when viewed in a plane parallel to the horizontal axis of said bore; and

said grommet being made from a comparatively stiff, shape retaining material, with sufficient spring and a low coefficient of friction in sliding against itself to permit said cylindrical body to spiral with the application of axial pressure on the frusto-conical surface of said flanges of said grommet and springs back to said cylindrical shape when the pressure is released.

4,282,628

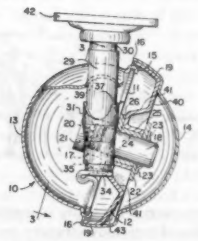
TILTED AXLE CASTER

Raymond A. McCarroll, Grosse Pointe Woods, Mich., assignor to Herder N.V., Netherlands Antilles

Division of Ser. No. 845,427, Oct. 25, 1977, Pat. No. 4,144,617, which is a continuation-in-part of Ser. No. 748,165, Dec. 7, 1976, abandoned. This application May 17, 1978, Ser. No. 906,365

Int. Cl.² B60B *33/00*

U.S. Cl. 16—18 A **14 Claims**

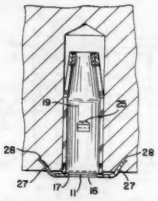


1. A caster comprised of two basic parts including a substantially flat body frame and a separate wheel rotatable relative to the body frame, said body frame being fabricated from a metal stamping and having a vertical swivel tube socket separately formed and mounted thereon, means securing said swivel socket to the body frame, a canted axle mounted on the body frame, said wheel being fabricated from a metal stamping and rotatable on said axle, a pair of enclosing covers secured respectively to said body frame and to said wheel, said swivel tube socket extending at an angle to the plane of said body frame and at least a portion of said socket extends through the body frame, and a cut-out in the body frame for the passage of said socket.

4,282,629
SOCKET FOR CASTER MOUNTING

Carl J. Demrick, Birmingham, and Frederick C. Greene, St. Joseph, both of Mich., assignors to Herder N.V., Antilles, Netherlands

Continuation of Ser. No. 7,484, Jan. 29, 1979, abandoned. This application Jul. 18, 1980, Ser. No. 170,066
Int. Cl.[3] A47B *91/00*
U.S. Cl. 16—43 6 Claims

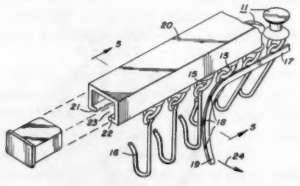


1. A caster mounting socket comprised of a base plate and an upstanding socket, a plurality of upstanding teeth arranged on a radius around said base plate and disposed concentrically about the perimeter thereof, said teeth each having a generally vertical outer surface and an inner surface extending vertically for at least part of the height of the teeth, and a sloping wedge shaped face on said inner surface immediately above said vertical part of the inner surface adjacent the upper edge of each of said teeth, said wedge shaped face being disposed at an upwardly and outwardly extending angle from said inner vertical surface of the respective teeth to provide teeth disposed concentrically around said perimeter each of which tapers upwardly and outwardly above said vertical inner surface as defined by said wedge shaped face.

4,282,630
DRAPERY CARRIER ASSEMBLY

Ellis I. Toder, 341 Militia Hill Rd., Fort Washington, Pa. 19034

Filed Aug. 23, 1979, Ser. No. 69,333
Int. Cl.[3] A47H *13/12, 15/02*
U.S. Cl. 16—93 D 4 Claims

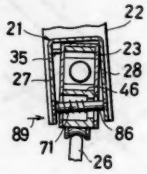


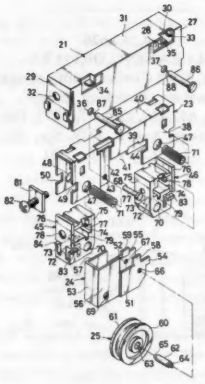
1. A drapery carrier assembly comprising in combinations,
(a) a plurality of individual drapery carriers each of which is formed at least in part of molded plastic, and each of which includes a part carryable by a drapery track and means for securing the carrier to a drapery, all of said carriers in said assembly being positioned with respect to one another so that the said parts carryable by a drapery track are in alignment for sequential insertion into the drapery track, and
(b) detachable means connected to all of said individual drapery carriers and effective until detached to maintain said drapery carriers in said alignment, said detachable means being connected to said molded plastic of each carrier by a rupturable molded plastic connection and is in the form of a tear strip having graspable means for tearing the strip from the carriers.

4,282,631
TILTABLE ROLLER ASSEMBLY

Takeo Uehara, Uozu, and Haruo Hori, Kurobe, both of Japan, assignors to Yoshida Kogyo K.K., Tokyo, Japan

Filed Apr. 2, 1979, Ser. No. 25,914
Claims priority, application Japan, Apr. 3, 1978, 53/43532[U]; Apr. 17, 1978, 53/50450[U]
Int. Cl.[3] E05D *13/02*
U.S. Cl. 16—102 14 Claims





1. A tiltable roller assembly for attachment to movable closure means, comprising:
(a) a first frame mountable on the movable closure means;
(b) a second frame loosely mounted in said first frame and tiltable therein in a first direction;
(c) a third frame pivotally mounted on said second frame;
(d) means on said second frame for positionally adjusting the position of said third frame relatively to said second frame in a second direction transverse to said first direction; and
(e) a roller rotatably supported on said third frame.

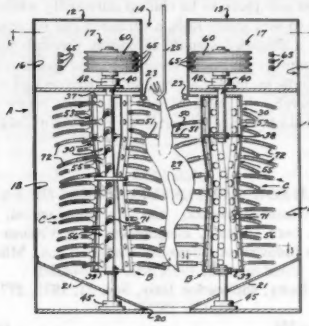
4,282,632
POULTRY PINNING AND DE-HAIRING MACHINE

Everett T. Conaway, Rte. 78, Bellfast, Seaford, Del. 19973

Filed Nov. 9, 1979, Ser. No. 92,889
Int. Cl.[3] A22C *21/02*
U.S. Cl. 17—11.1 R 8 Claims

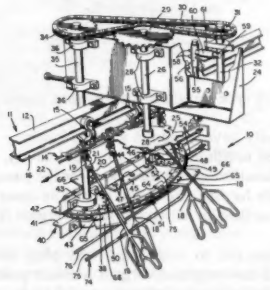
1. An elongated columnar member for supporting a plurality of poultry pinning and de-hairing flexible fingers, said elongated columnar member having a plurality of attaching means for receiving said flexible fingers in spaced apart relation therealong and extendant outwardly from the periphery thereof and including a generally cylindroidal upper portion for mounting of said fingers thereon in juxtaposition for free form inflect engagement with the leg area of a poultry carcass, a central portion extendant from said upper portion, said central portion being generally of an inverted frusto-conical configuration for mounting of said fingers thereon for free form inflect engagement with the breast, back and flanks of a poultry carcass

adjacent the hock area thereof, and a lower portion extendant from said central portion, said lower portion being generally of a right frusto-conical configuration for mounting of said fingers thereon for free form inflect engagement with the neck, wings, breast, back and flank of a poultry carcass in the shoulder area thereof, said elongated columnar member comprising



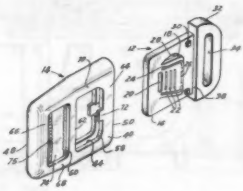
a plurality of elongated plate members, each of said plate members having elongated side portions at an angle to each other along the center line of said plate members, and substantially cylindrical sub-frame means, said plate members being attached about the periphery of said substantially cylindrical sub-frame members to define the periphery of said elongated columnar member.

4,282,633
LINE DIVIDER
Kenneth Z. Graham, Rt. 2, Dawsonville, Ga. 30534, and Johnny R. Graham, Rt. 8, Gainesville, Ga. 30501
Filed Nov. 13, 1979, Ser. No. 93,747
Int. Cl.³ A22C *21/00*
U.S. Cl. 17—45 **9 Claims**



1. A method of dividing a line of poultry or the like supported on hangers with the hangers suspended downwardly from a conveyor and moving in alignment in series along a path through a processing plant comprising the steps of initially engaging one hanger of each of a multiple number of the hangers with an engaging surface oriented approximately parallel to the path of movement of the hangers along the conveyor line and moving the engaging surface along a path which diverges from the path of movement of the unengaged hangers while maintaining the engaging surface oriented substantially parallel to the path of movement of the unengaged hangers to urge the engaged hangers laterally with respect to the direction of movement of the hangers along the conveyor line substantially without causing the hangers or the poultry carried thereby to be deflected from the longitudinal movement with the conveyor line.

4,282,634
BUCKLE
Jack Krauss, 14 Tanglewood La., Freeport, N.Y. 11520
Filed Dec. 21, 1979, Ser. No. 106,279
Int. Cl.³ A44B *11/25, 17/00*
U.S. Cl. 24—230 R **6 Claims**



1. A buckle comprising:

a female member having an upper wall, a lower wall, side walls interconnecting said upper and lower walls, and a slot defined by said walls and extending longitudinally through said member, said slot having an entrance at one end of said female member;

first and second openings within said upper wall, first and second openings in said lower wall registrable, respectively, with said first and second openings in said upper wall, one pair of registrable openings located nearer to said slot entrance than said other pair of registrable openings, and said pairs of registrable openings extending substantially perpendicular to said slot;

a lip member extending from a portion of said lower wall over part of said opening nearer said slot entrance, said lip extending in a direction away from said slot entrance, said lower wall having a surface extending further within said slot than any part of said lip, to form an abutment;

said slot entrance being defined by ends of said upper, lower, and side walls, and including a plurality of notches extending within said side walls and perpendicular to said slot;

a column positioned within and movable along said slot, said column positioned between said other pair of registrable openings which are further from said slot entrance than said one pair of registrable openings;

a male member having a portion thereof positioned within said slot, said male member including a plate-like portion having dimensions similar to those of said slot and inserted within said slot, and a slotted member connected to said plate-like portion positioned outside of said slot;

a projection extending at an acute angle from said plate-like portion, said projection having one end resiliently connected to said plate-like portion and a distal end positioned adjacent said lip in such a manner that it cannot emerge from said opening near the slot entrance, said distal end also being located in proximity to said abutment formed by said lower wall such that the male member cannot be moved longitudinally from said slot without contacting said abutment; and

a plurality of stops protruding perpendicularly from said plate-like portion, said stops being positioned within said notches and having outer structural configurations corresponding to the inner structural configurations of said notches.

4,282,635

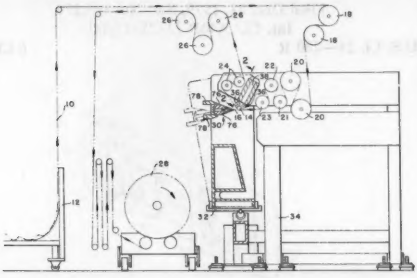
PILE FABRIC SCULPTURING APPARATUS

Walter Engels, Tryon, N.C., assignor to Milliken Research Corporation, Spartanburg, S.C.

Division of Ser. No. 53,987, Jul. 2, 1979, Pat. No. 4,222,158, which is a division of Ser. No. 904,111, May 8, 1978, Pat. No. 4,218,810. This application Dec. 3, 1979, Ser. No. 99,216

Int. Cl.³ D06C *23/00, 13/00*

U.S. Cl. 26—16 **1 Claim**



1. An apparatus for trimming the pile of a fabric having areas of fibers stiffened by an adhesive and areas of unstiffened fibers comprising: a frame, blade cutter means comprising an endless flexible band pivotally mounted on said frame, means to supply pile fabric to be trimmed into cutting relationship to said cutting means and a second means mounted adjacent to said cutting means to maintain the fabric into contact with said cutting means, said second means including a substantially cylindrical elongated support member having a body portion with gripping means thereon to counteract the drag of the blade of said cutting means on the pile fabric being trimmed, and means for matching the curvature of said support member to the curvature of said endless flexible band, said means including a plurality of means for supporting and twisting said support member, each said means for supporting and twisting said support member including: a pillow block; at least two rollers rotatably mounted on said pillow block, at least one of said rollers having a length which is more than about three times the diameter of said support member, said rollers being rotatable about parallel axes of rotation; and means for extending and withdrawing said pillow block relative to said blade means; for elevating and lowering said pillow block relative to said blade means; and for aligning the axis of rotation of said rollers with the curvature of said blade whereby when said pile fabric is tensioned, the curvature of said support member is matched to the curvature of said blade, said means including a plurality of set screws operably associated with each pillow block on opposite sides thereof.

4,282,636

CHAIN GUIDE FOR A STENTER

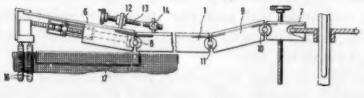
Hans Cramer, Aachen, Fed. Rep. of Germany, assignor to H. Krantz GmbH & Co., Aachen, Fed. Rep. of Germany

Filed Jul. 25, 1979, Ser. No. 60,336

Claims priority, application Fed. Rep. of Germany, Aug. 3, 1978, 2834007

Int. Cl.³ D06C *3/02*

U.S. Cl. 26—91 **2 Claims**



1. In a stenter, a chain guide comprising a pair of guide rail assemblies, each said guide rail assembly including a pair of return wheels, a chain mounted on said wheels and arrayed for vertical reversal, one said wheel being carried by a head piece and the other said wheel being carried by an end piece, first pivot means connecting said head piece to said guide rail assembly for pivotal movement in an outward angular direction relative to said guide rail assembly, second pivot means interposed between said end piece and said guide rail assembly for enabling said end piece to be shifted outwardly while remaining parallel to said guide rails, a threaded nut secured to said head piece, a threaded spindle extending through said nut, a mounting member pivotally secured to said guide rail assembly, said spindle including a free end secured to said mounting member whereby the angle of said head piece relative to said guide rail assembly may be varied by rotation of said spindle.

4,282,637

NOZZLE FOR THE TEXTURIZATION OF YARNS

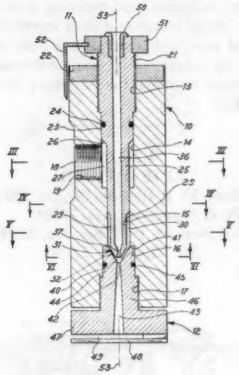
Giuseppe Mosseri, Monza, and Enrico Lucioni, Cesano Maderno, both of Italy, assignors to Snia Viscosa Societa' Nazionale Industria Applicazioni Viscosa S.p.A., Milan, Italy

Filed Sep. 21, 1978, Ser. No. 944,320

Claims priority, application Italy, Sep. 21, 1977, 27748 A/77

Int. Cl.³ D02G *1/16*

U.S. Cl. 28—254 **11 Claims**



1. A Venturi type nozzle for texturizing yarns, said nozzle comprising:

a hollow body having therein an axial cavity;

an elongated needle extending into said cavity, said needle having therethrough an axial bore for the passage of yarn, said needle having a head end having an inner orifice and an outer surface including a first convergent frustoconical surface;

a plug connected to said body, said plug having therethrough a convergent-divergent Venturi passage including a second convergent frusto-conical surface facing said first frusto-conical surface and spaced therefrom to define a substantially frusto-conical chamber, a downstream divergent frusto-conical surface, and a minimum cross-section separating said convergent and divergent frusto-conical surfaces;

the conicities of said first and second frusto-conical surfaces being equal;

a lateral passage extending into said body for supplying thereinto a gas;

passage means, between the interior of said body and the exterior of said needle, for directing gas supplied through said lateral passage to and through said frusto-conical chamber and through said minimum cross-section and said divergent frusto-conical surface, to thereby withdraw yarn from said orifice of said needle, said passage means

being arranged symmetrically with respect to the longitudinal axis of said needle from said lateral passage to the upstream end of said frusto-conical chamber;

the ratio of the axial distance between said first and second convergent frusto-conical surfaces, measured on a straight line parallel to said longitudinal axis of said needle, to the diameter of said needle orifice being not greater than 0.5; and

said needle including a segment having a polygonal cross-section including vertices engaging a circular cylindrical wall defining said cavity of said body and flat surfaces spaced from said cylindrical wall and defining therebetween elongated chambers which at least partially define said passage means, the total free cross-sectional area of said elongated chambers, through which area said gas flows, being slightly larger than the sum of the areas of said needle orifice and said minimum cross-section.

4,282,638

CONTROLLED DEFLECTION ROLL

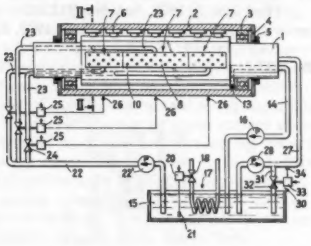
Alfred Christ, Zürich, and Rolf Lehmann, Rudolfstetten, both of Switzerland, assignors to Escher Wyss Limited, Zürich, Switzerland

Filed Dec. 26, 1979, Ser. No. 107,134

Claims priority, application Switzerland, Jan. 22, 1979, 603/79

Int. Cl.³ B21B *13/02*

U.S. Cl. 29—116 AD **17 Claims**



1. A controlled deflection roll comprising:

a stationary roll support;

a roll shell rotatable about said stationary roll support;

means for rotatably mounting said roll shell for rotation about said stationary roll support;

said stationary roll support and said rotatable roll shell coacting with one another so as to form therebetween an intermediate compartment;

at least one spray device arranged at the stationary roll support for spraying an inner surface of the roll shell with jets of a heat carrier-liquid at a regulated temperature;

said spray device being provided with openings distributed in accordance with a substantially uniform pattern;

said openings serving for forming compact liquid jets extending at least in part in parallelism to one another and directed towards the inner surface of the roll shell; and

said liquid jets deviating with respect to a normal taken at the inner surface of the roll shell by at most through an angle of 30°.

4,282,639

HEATED CONTROLLED DEFLECTION ROLL

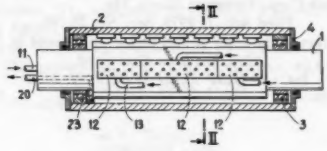
Alfred Christ, Zurich, and Rolf Lehmann, Rudolfstetten, both of Switzerland, assignors to Escher Wyss Limited, Zurich, Switzerland

Filed Dec. 26, 1979, Ser. No. 107,135

Claims priority, application Switzerland, Jan. 23, 1979, 640/79

Int. Cl.³ B21B *13/02*

U.S. Cl. 29—116 AD **10 Claims**



1. A heated controlled deflection roll comprising:

a stationary support;

a rotatable roll shell;

means for mounting said rotatable roll shell to be rotatable about said stationary support;

at least one pressure element for supporting the roll shell;

a pump device;

pressure line means for connecting the pump device with the pressure element for the infeed of a hydraulic pressurized fluid medium to the pressure element for supporting the roll shell;

return flow line means for the fluid medium connected between the controlled deflection roll and said pump device;

heat exchanger means for operatively connecting said return flow line means with said pressure line means and for transmitting heat from the return flow line means to the pressure line means; and

cooler means arranged in the return flow line means after the heat exchanger means.

4,282,640

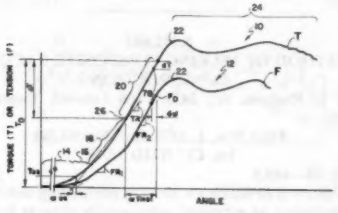
TENSION CONTROL OF FASTENERS

Siavash Eshghy, Pittsburgh, Pa., assignor to Rockwell International Corporation, Pittsburgh, Pa.

Division of Ser. No. 912,151, Jun. 2, 1978, Pat. No. 4,179,786, which is a continuation-in-part of Ser. No. 766,429, Feb. 7, 1977, Pat. No. 4,106,570, and Ser. No. 712,554, Aug. 9, 1976, abandoned. This application Apr. 19, 1979, Ser. No. 31,354

Int. Cl.³ B23P *19/06*

U.S. Cl. 29—240 **5 Claims**



1. Apparatus for tightening a multiplicity of substantially identical joints including at least one threaded fastener through a region of relatively free rotation and no fastener stress at least partially into a region of increasing fastener stress, comprising

means for applying torque to the fastener;

means for determining a value of applied torque, variable

from joint to joint, in the region of relatively free rotation; and

means for terminating tightening of the fastener in the region of increasing stress in response to a tightening parameter compensated by the value of applied torque in the region of relatively free rotation.

4,282,641

METHOD OF CONVERTING MOTOR CAR

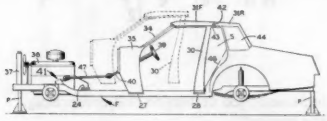
Charles W. Phillips, Pompano Beach, Fla., assignor to Grandeur Motorcar Corp., Pompano Beach, Fla.

Filed Apr. 2, 1979, Ser. No. 26,750

The portion of the term of this patent subsequent to Jul. 11, 1995, has been disclaimed.

Int. Cl.³ B23P *15/00*; B60P *3/42, 3/00*

U.S. Cl. 29—416 **5 Claims**



1. A method of converting a passenger car, which has a four-door body bolted to the frame, to provide a shortened body at the back and a lengthened engine compartment at the front without structurally modifying the frame, which method comprises the steps of:

removing, by cutting the body without cutting the frame, a longitudinal segment of the roof and a longitudinal section of the floor of the car body immediately behind the door posts to sever the car body into front and rear sections;

disconnecting the steering shaft from the steering gear for the front wheels;

with the front fenders and the engine compartment hood removed, unbolting the front section of the car body from the frame and displacing said front section of the car body and the steering shaft as a unit rearwardly away from the front wheels along the frame to bring the severed front and rear sections of the roof into aligned, abutting juxtaposition;

bolting the front section of the car body to the frame in its rearwardly displaced position along the frame, and joining said front and rear sections of the car body to each other at the roof and floor to provide a converted unitary car body which has been shortened immediately behind the door posts;

operatively coupling an extension shaft between the steering shaft and the steering gear for the front wheels;

and attaching to the car body an engine compartment hood and front fenders which are longer than the original hood and fenders by an amount substantially equal to the length of the segment removed from the roof.

4,282,642

METHOD OF MAKING COMPOSITE RACQUET CONSTRUCTION

Robert E. Rodgers, Jr., 5455 Loch Lomond, Houston, Tex. 77096

Filed Nov. 1, 1979, Ser. No. 90,291

Int. Cl.³ B21D *35/00*

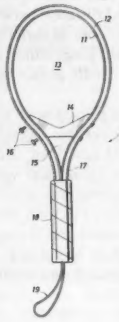
U.S. Cl. 29—469.5 **10 Claims**

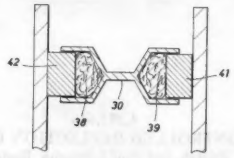
1. A method of making a racquet comprising the steps of:

(a) providing an extruded, substantially straight lengthwise, metal channel having cavities extending therealong;

(b) bending the metal channel into a desired curved form of a racquet frame having a stringing surface on the outer surface and side faces having cavities and wherein the ends of the metal channel extend into a handle on the racquet;

(c) positioning a continuous lengthwise strip of uncured, pliable laminate material in at least one of said cavities of the extruded curved metal channel; and





(d) curing the cavity located laminate material to form laminations of the plastic material to the metal channel.

4,282,643

METHOD OF MAKING METAL GASKETS

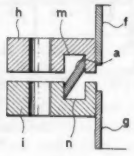
Koyu Yamasaki, Obu, and Yousuke Iino, Nagoya, both of Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Japan

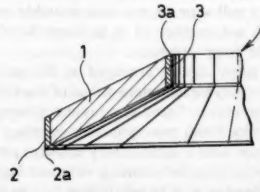
Filed Jun. 5, 1978, Ser. No. 912,215

Claims priority, application Japan, Jun. 9, 1977, 52-67326

Int. Cl.³ B22D *11/126*

U.S. Cl. 29—527.2 **4 Claims**





1. A method of making a conical metal gasket which comprises providing a hollow cylindrical blank formed of a first metallic material, first coating said hollow cylindrical blank on its inner and outer cylindrical surfaces with a uniform thick-

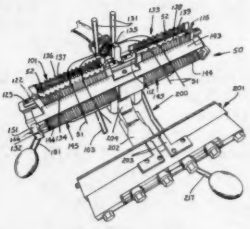
ness of a second metallic material to form a cylindrical inner surface coating layer and a cylindrical outer surface coating layer on said inner and outer cylindrical surfaces, said second metallic material being softer than said first metallic material, then conically cutting the wall and said inner and outer surface coating layers of said coated cylindrical blank along an angle with respect to the central axis of the cylindrical blank to form a cut surface with sharpened end edges of said coating layers, said sharpened end edges lying on a uniform conical surface of revolution about the central axis of said cylindrical blank, and then conically cutting the wall and said inner and outer surface coating layers of the cylindrical blank at a second location to form a second cut surface, said second cut surface being parallel to said first cut surface.

4,282,644

TOOL FOR ASSEMBLING CONDUCTORS TO CONNECTOR ELEMENT

Edwyn H. Petree, Dunwoody, Ga., assignor to Western Electric Company, Inc., New York, N.Y.

Filed Aug. 30, 1979, Ser. No. 71,161
Int. Cl.[3] H01R *43/04*
U.S. Cl. 29—566.3 **6 Claims**



1. A tool for severing end portions of each of a plurality of insulated conductors and for securing the plurality of conductors to an elongated connector element having a plurality of conductor-receiving portions, said tool comprising:

a nest for holding an elongated connector element having a generally rectangular cross section and having conductor-receiving recesses formed along side surfaces thereof;

means disposed on at least one side of said nest for holding a plurality of conductors spaced along the connector element transversely across an upper surface of the element and aligned with conductor-receiving recesses of the connector element preparatory to the conductors being severed and secured to the connector element;

cutting means upstanding from said next adjacent that side surface of the connector element which is to secure a free end portion of each of the conductors;

forming means including a cavity adapted to receive a portion of the connector element which includes the conductor-receiving recesses and cooperating with said cutting means for causing a free end portion of each conductor to be severed so that a remaining free end portion of each has a predetermined length to be secured to the one side surface of the connector element and for causing an end portion of each of the conductors to be formed into a generally U-shaped configuration within an associated aligned one of the conductor-receiving recesses of the connector element;

means connected movably to said nest for mounting said forming means for pivotal movement from an open position which permits the connector element to be loaded into said nest to a closed position above said nest and for reciprocal movement toward and away from said nest;

means capable of being interposed between said nest and said mounting means for spacing said forming means at each of at least two predetermined distances from said nest; and

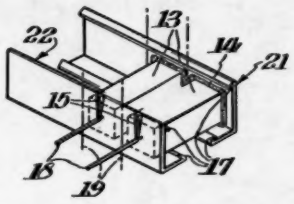
means rendered effective subsequent to said spacing means being interposed between said nest and said mounting means for moving said forming means toward said nest to cause the conductor end portions to be formed partially about the connector element, cut and then formed completely into the U-shaped configuration about the connector element.

4,282,645

METHOD OF ASSEMBLING AN ENCAPSULATED CHIP CAPACITOR

David G. Thompson, Williamstown, Mass., and John T. Ogilvie, Bennington, Vt., assignors to Sprague Electric Company, North Adams, Mass.

Division of Ser. No. 929,760, Jul. 31, 1978, Pat. No. 4,247,883.
This application Oct. 22, 1979, Ser. No. 86,843
Int. Cl.[3] H01L *21/64*
U.S. Cl. 29—570 **8 Claims**



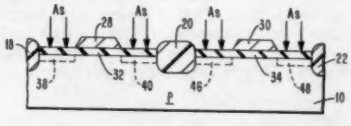
1. A method for assembling and encapsulating chip capacitors comprising providing two metal channels of substantially L-shaped cross-section, each having a vertical plate portion and a horizontal plate portion forming a right angle along a common edge, said channels facing each other to serve as electrodes, then placing capacitor bodies in side-by-side relationship and spaced from each other in and between said channels, electrically connecting the cathode of each body to one of said channels, electrically connecting the cathode of each body to one of said channels, electrically connecting the anode of each body to the other of said channels, then filling the channel assembly with a curable insulating material to encapsulate said bodies, curing said material, and then separating the encapsulated capacitors from each other into individual units.

4,282,646

METHOD OF MAKING A TRANSISTOR ARRAY

Andres G. Fortino, Essex; Henry J. Geipel, Jr., Essex Junction; Lawrence G. Heller, Essex Junction, and Ronald Silverman, Essex Junction, all of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 20, 1979, Ser. No. 68,282
Int. Cl.[3] H01L *21/26*
U.S. Cl. 29—571 **8 Claims**



1. A method of making an array of transistors which includes:

forming a plurality of gate electrodes insulated from a semiconductor substrate having a given type conductivity,

introducing a first impurity having a conductivity opposite to that of said given type conductivity into regions of said substrate defined by an edge of each of said gate electrodes,

introducing a second impurity into selected ones of said

regions along the edge of their associated gate electrodes, said second impurity having an opposite conductivity to and a significantly higher diffusivity than that of said first impurity, and

heating said substrate to drive said second impurity through said substrate under the associated gate electrodes to decrease the conductivity of said substrate under said associated gate electrodes.

4,282,647

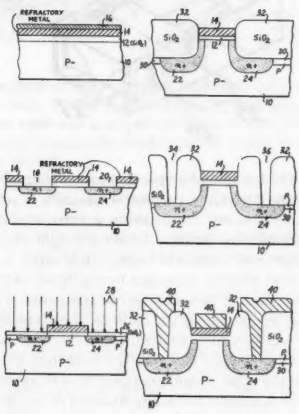
METHOD OF FABRICATING HIGH DENSITY REFRACTORY METAL GATE MOS INTEGRATED CIRCUITS UTILIZING THE GATE AS A SELECTIVE DIFFUSION AND OXIDATION MASK

Paul Richman, St. James, N.Y., assignor to Standard Microsystems Corporation, Hauppauge, N.Y.

Continuation-in-part of Ser. No. 893,336, Apr. 4, 1978, abandoned. This application Sep. 26, 1979, Ser. No. 79,163

Int. Cl.[3] **H01L** *21/223, 21/283*

U.S. Cl. 29—571 **11 Claims**



1. A process for fabricating as MOS device comprising the steps of (a) providing a substrate of a first conductivity type, (b) forming on said substrate an insulating layer and an overlying refractory metal layer, (c) selectively removing portions of said refractory metal and the underlying portion of said insulating layer to define openings at the locations of source and drain regions, (d) introducing impurities of an opposite conductivity type through said openings into the exposed upper surface of said substrate to form source and drain regions, (e) removing the portions of said refractory metal remaining over the field regions while allowing the refractory metal to remain over predetermined gate regions; (f) removing the exposed insulating regions and then oxidizing the surface of said substrate to form an oxide region at locations other than those protected by the remaining portion of refractory metal, (g) forming a thick oxide layer by thermal oxidation in areas not protected by said refractory metal, and (h) selectively forming a metalization pattern over said thick oxide regions and over said refractory metal.

4,282,648

CMOS PROCESS

Kenneth K. Yu, Portland; Mark T. Bohr, Aloha, and Mark B. Seidenfeld, Portland, all of Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Filed Mar. 24, 1980, Ser. No. 133,580

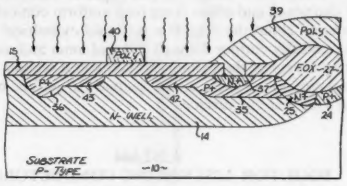
Int. Cl.[3] **H01L** *21/22*

U.S. Cl. 29—571 **11 Claims**

1. In the fabrication of CMOS integrated circuits, a process for forming a channel stop in a substrate, which includes an n-type region and a silicon nitride layer, comprising the steps of:

defining an opening through said silicon nitride layer, said opening being formed at a peripheral area of said n-type region;

doping said substrate with a p-type dopant through said opening; and



forming an oxide on said substrate at said opening, such that a first region is formed from accumulated n-type dopant from said n-type region and a second region is formed adjacent to said first region from p-type dopant from said doping step;

whereby said first and second regions form a channel stop.

4,282,649

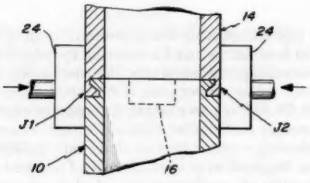
INTERLOCKED WAVEGUIDE ASSEMBLY

Ronald A. Wilson, Medway, Mass., assignor to Microwave Development Laboratories, Needham, Mass.

Continuation-in-part of Ser. No. 900,736, Apr. 27, 1978, abandoned. This application Aug. 13, 1979, Ser. No. 66,036

Int. Cl.[3] **F16I** *13/08*

U.S. Cl. 29—600 **12 Claims**



1. A method of joining sections of hollow rectangular waveguide, which joined sections abut end-to-end, the mated ends of the sections having cooperating means along the broad walls which form interlocking joints between the sections, one of the sections having locating tabs extending from its narrow walls and overlapping the adjacent narrow walls of the mated section, said method comprising the steps of;

providing at least one of the interlocking means of at least one section in a yieldable state,

providing said at least one of the interlocking means of the one section opened,

joining said at least one of the interlocking means of the one section opened,

joining the sections with a loose fit therebetween.

and applying pressure at the joint to close the interlocking means of one section against the interlocking means of the other section with the inner walls of the joined sections at the joint being coplanar forming a smooth contiguous inner hollow waveguide surface,

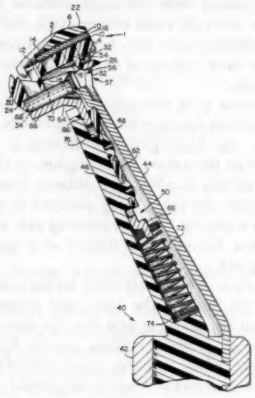
wherein said joint is formed by at least one leg having contiguous thin-walled and thick-walled sections with the thin-walled section having a thickness in the range of 0.005 to 0.025 inch and with the thick-walled section having a thickness less than the waveguide wall thickness.

4,282,650

RAZOR BLADE ASSEMBLY

Robert A. Trotta, Winthrop, Mass., assignor to The Gillette Company, Boston, Mass.

Filed Aug. 31, 1979, Ser. No. 71,711
Int. Cl.³ B26B *21/06, 21/52*
U.S. Cl. 30—47 **1 Claim**



1. A razor blade assembly comprising a first body portion having blade means permanently fixed therein, a second body portion disposed forwardly of said first body portion and having a guard means extending therefrom, said first body portion being pivotally connected to said second body portion, pivot connecting means comprising a projection disposed centrally on an underside of said first body portion, said projection being configured to form a recess between said projection and said underside of said first body portion, said recess presenting an opening rearwardly of said assembly adapted to receive a razor handle pivot connection portion, and a fixed connecting means depending from said second body portion and comprising slide means extending rearwardly from said guard means and adapted to slidingly engage complementary slide means on said razor handle.

4,282,651

RAZOR HANDLE

Robert A. Trotta, Winthrop, Mass., assignor to The Gillette Company, Boston, Mass.

Filed Aug. 31, 1979, Ser. No. 71,476
Int. Cl.³ B26B *21/06, 21/22*
U.S. Cl. 30—89 **5 Claims**

1. A razor handle for use in conjuction with a replaceable blade assembly, the handle comprising a grip portion, a neck portion extending from said grip portion, a pivot connecting means extending from a free end of said neck portion and adapted to engage said blade assembly to form a pivotal connection therebetween, and a fixed connecting means extending from said free end of said neck portion and adapted to fixedly interconnect with mounting means on said blade assembly, said pivot connecting means being immovably disposed on said neck portion and said fixed connecting means being disposed

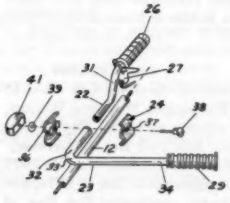
on a bar, said bar being reciprocably movable in said neck portion.

4,282,652

APPARATUS FOR CUTTING VEGETATION

George C. Ballas, Sr., Houston, Tex., assignor to Emerson Electric Co., St. Louis, Mo.

Filed May 13, 1977, Ser. No. 796,906
Int. Cl.³ A01D *56/00*
U.S. Cl. 30—276 **27 Claims**



1. In an apparatus for cutting vegetation having a support tube including a substantially straight portion and the support tube carrying a motor, a drive connection and a cutting head mounted for rotation about an axis intersecting the straight portion of the support tube, the head carrying a cutting element extending within a cutting plane, and the motor, drive connection and cutting head providing a mass distribution wherein the center of gravity of the apparatus resides along the straight portion of the support tube and at a location spaced from the cutting head, the improvement comprising:

(a) handle means secured by a clamp upon the straight portion of the support tube adjacent the center of gravity;

(b) said handle means formed of first and second handle members with a rotary interconnection adjacent the clamp on the support tube;

(c) said first handle member extending in a direction away from said cutting head but in parallel relationship with the support tube and said first handle member having an intermediate offset portion adjacent a hand grip at the free end thereof;

(d) said second handle member extending in a first portion from said clamp toward said cutting head and having an arcuate second portion extending laterally from the first portion to an angled third portion carrying a hand grip at the free end thereof; and

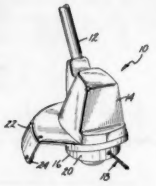
(e) said first and second handle members having lengths and non-linear portions arranged so that the hand grips reside spacially in a user's hands when his arms hang downwardly in a natural position along his body with said cutting head positioned substantially directly in front of the user's body.

4,282,653

CUTTING ELEMENT FOR VEGETATION LINE TRIMMERS

Robert C. Comer, Hopkins, and Henry B. Tillotson, Minneapolis, both of Minn., assignors to The Toro Company, Minneapolis, Minn.

Filed Jan. 15, 1979, Ser. No. 3,242
Int. Cl.[3] A01D *50/00*
U.S. Cl. 30—276 **11 Claims**



1. A cutting assembly for use in a vegetation line trimmer, comprising:

a filament holder mounted to the vegetation line trimmer for rotation about an axis; and

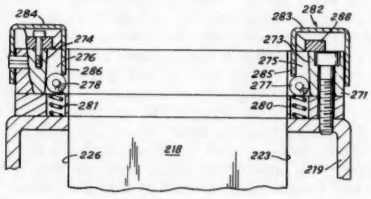
a plurality of associated cutting filaments the free ends of which emanate from a common situs at the outer surface of said filament holder, said plurality of filaments disposed for radial extension from said outer surface when said filament holder is made to rotate about said axis.

4,282,654

MEASURING AND/OR TRACING DEVICE

Karl Reiff, Plochingen; Wolfgang Wagner, Warnau, and Klaus Masur, Esslingen, all of Fed. Rep. of Germany, assignors to C. Stiefelmayer KG, Fed. Rep. of Germany

Division of Ser. No. 778,808, Mar. 17, 1977, Pat. No. 4,149,317. This application Jan. 9, 1979, Ser. No. 2,162
Claims priority, application Fed. Rep. of Germany, Mar. 30, 1976, 2613451
Int. Cl.[3] G01B *3/00*
U.S. Cl. 33—1 M **5 Claims**



1. In a measuring and tracing device, of the kind having:

(i) a vertical column

(ii) a transverse sliding unit secured to said column and movable in a vertical direction,

(iii) a cross arm held by said unit and movable horizontally

(iv) a holder on the end of said cross arm for a measuring and tracing tool

(v) a counterweight to balance the transverse sliding unit, said counterweight being disposed inside the column so that it can move freely and being attached to the transverse sliding unit by a cable passing over a guide roller at the upper end of the column, the improvement which consists in that:

(a) a safety braking device is attached to the transverse sliding unit and acts in conjunction with the external surfaces of the column, the cable being secured to the braking device so that, in consequence of the cable tension exerted, the braking device is held in a disengaged position out of contact with the outer surfaces of the column, whereas when the cable tensions falls, the braking device drops automatically into braking position and engages with the outer surfaces of the column, thereby preventing movement,

(b) the column is of rectangular cross-section and has two outer surfaces opposite and approximately parallel to one another, the braking device having a pivoted frame mounted on the transverse sliding unit so that it can rotate around an axis disposed at a distance from the center of the column, the cable being attached to one side of the frame at a spacing from the pivoting axis, the other side of said frame having fitted thereto at a spacing from the pivoting axis

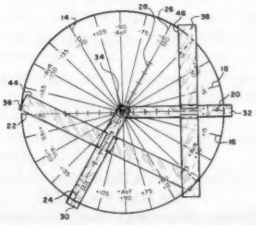
at least one vertical brake adjusting spring acting in the same direction as the force of the cable, said pivoted frame when rotating about the pivoting axis into the disengaged position and the braking position striking against braking elements fitted in the area of two opposite outer faces of the column and located, in the disengaged position, substantially out of contact with and at a spacing from the corresponding outer surface and, in the braking position, in contact with the corresponding outer surface in such a way as to prevent movement, said braking elements being cylindrical gripping rollers fitted in the region of both mutually opposite outer surfaces of the column.

4,282,655

CARDIAC AXIS CALCULATOR

Daniel Tinman, 2656 Hampshire Rd., Cleveland Heights, Ohio 44106

Filed Jan. 11, 1980, Ser. No. 111,243
Int. Cl.[3] G01B *3/00*
U.S. Cl. 33—1 C **6 Claims**



1. A device for determining the mean cardiac axis in connection with an electrocardiograph comprising:

a substantially planar disc shaped member having a plurality of radial lines thereon;

a pair of radially extending arms pivotally attached to a point on said disc shaped member, and

a pair of elongated slides, each slide being carried by a different one of said arms and being adapted to slide radially along the length of the arm, each slide including an elongated element thereon which is substantially perpendicular to its respective arm.

4,282,656

CYLINDER FOR A PAPER MACHINE, OR THE LIKE

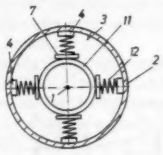
Christian Schiel, Heidenheim, Fed. Rep. of Germany, assignor to J. M. Voith GmbH, Fed. Rep. of Germany

Filed Nov. 6, 1979, Ser. No. 91,397

Claims priority, application Fed. Rep. of Germany, Nov. 15, 1978, 2849454

Int. Cl.[3] **F26B** *25/20*

U.S. Cl. 34—110 **20 Claims**



1. A cylinder for use in paper making machines, or the like, comprising:

a hollow cylinder having an inner surface; a plurality of ridges extending in the longitudinal direction of said cylinder, applied against said inner surface of said cylinder and annularly arrayed in spaced apart relationship around said inner surface of said cylinder;

a common support in said cylinder for all said ridges; a respective bar extending longitudinally of said cylinder and interposed between said common support and each said ridge; each said bar being in engagement with said common support; a plurality of resilient connections at longitudinally spaced apart locations between each said bar and a said ridge where that said bar is interposed between said common support and that said ridge for resiliently urging said ridges in a direction radially outwardly of said cylinder; said common support restraining motion of each said bar radially inwardly with respect to said cylinder.

4,282,657

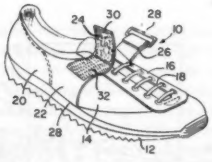
HEEL RESTRAINT WITH AN ADJUSTABLE AND FLEXIBLE CLOSURE ASSEMBLY FOR SHOES

Anthony J. Antonious, 205 E. Joppa Rd., Towson, Md. 21204

Filed Mar. 16, 1979, Ser. No. 20,990

Int. Cl.[3] **A43B** *11/00, 5/00*

U.S. Cl. 36—50 **31 Claims**



1. A shoe having a sole, uppers and a variable opening, the improvement including a heel counter adjacent the rear portion of said uppers, said heel counter formed with at least one adjustable and flexible closure assembly located adjacent the rear and side portions of said uppers forming a heel restraint, said closure assembly comprising:

a flexible, multi-adjustable, separable fastener means having first and second fastening members including arrays of complementary, coating flexible gripping elements for securing said closure assembly;

a fastener strap having a fixed portion and a free end, said free end including said first fastening member, said second fastening member positioned adjacent said fixed portion of said fastener strap; and

anchor means having a fixed portion and a free end, said free end having an opening through which the free end of said fastener strap passes, permitting adjustment to maintain a precise desired tautness of said closure assembly to fasten said shoe.

4,282,658

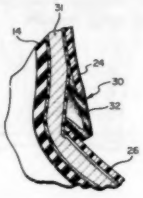
ANTI-BOWING FORM FITTING BOOT

Chris A. Hanson, Boulder, and George S. Henderson, Nederlands, both of Colo., assignors to Hanson Industries Incorporated, Boulder, Colo.

Filed Feb. 20, 1980, Ser. No. 123,049

Int. Cl.[3] **A43B** *5/04*

U.S. Cl. 36—121 **9 Claims**



1. In a boot that covers the ankle of the wearer, said boot including a vamp and an upper instep portion, an improvement for preventing bowing of the boot on either boot side adjacent the wearer's ankles, said improvement comprising:

said upper instep portion extending downwardly to overlie a portion of said vamp;

a pleat member interconnecting said upper instep portion and said ramp portion; and

said pleat member including an aperture extending transversely across the front of said boot and between said upper instep portion and said vamp portion.

4,282,659

SPORTS BOOT STRAP CLOSURE SYSTEM

Rene Bourque, Duvernay, and Lorne S. Overbaugn, Burlington, both of Canada, assignors to Gamebridge, Inc., Quebec, Canada

Filed Aug. 21, 1979, Ser. No. 68,400

Int. Cl.[3] **A43B** *5/00, 11/00*

U.S. Cl. 36—121 **12 Claims**

1. A closure system for a front entry boot having a top, an ankle portion with a back, a front opening, and sides extending above the ankle bone of a wearer, and an upper with a front opening, comprising:

(a) a substantially flat flexible strap having two ends;

(b) a plurality of guide means on the upper disposed on opposite sides of the front opening for receiving and guiding said strap, said guide means constructed such that said

strap can move therethrough, said strap being laced through said guide means in such a direction that the ends of said strap are generally near said top of the boot;

(c) a hook means on the side of the ankle portion;

(d) fastening means on said strap, said fastening means including a strap adjusting part through which said strap passes, said strap adjusting part releasably retaining said strap in a fixed relationship with said fastening means;

(e) attaching means on said strap between said guide means and said fastening means, said attaching means releasably attaching said strap to said hook means, a length of said strap passing across said ankle portion, and passing through and reversing at said attaching means, said strap arranged such that tension applied to said strap at either said fastening means or said attaching means will tend to close said front openings and tighten said length of said strap across said ankle portion.

4,282,660

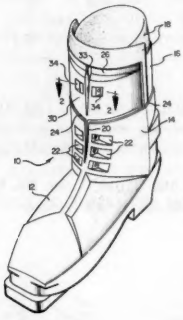
LEG-SIZE ADJUSTING FORM FITTING BOOT

Chris A. Hanson, Boulder, Colo., assignor to Hanson Industries Incorporated, Boulder, Colo.

Filed Feb. 20, 1980, Ser. No. 123,048

Int. Cl.³ A43B *5/04*

U.S. Cl. 36—121 **5 Claims**



1. In a boot that includes a substantially rigid shell for covering at least to the ankle of the wearer, and a substantially rigid rear tongue member extending upwardly from the shell along the back of the wearer's lower leg, the improvement comprising:

an elongated, substantially rigid, curved tab member having a thin lower portion adapted for insertion into said boot shell in the instep area and a thick walled upper portion extending from the top of said shell in the area of the front of the wearer's lower leg opposite said substantially rigid rear member;

means for securing said tab lower portion to said shell;

said tab upper portion including a slit extending downwardly from the top of said thick walled tab upper portion; and

adjustable threaded means on said thick walled tab upper portion extending across said slit to vary the width of said slit in conformance with the lower leg size of said wearer.

4,282,661

TOWING SUCTION DEVICE FOR A DREDGING CRAFT

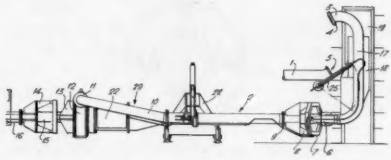
Willem Nagelkerke, Oosterhout, Netherlands, assignor to B.V. Scheepswerf en Reparatie bedrijf "Breebot", Dordrecht, Netherlands

Filed Oct. 30, 1979, Ser. No. 89,445

Claims priority, application Netherlands, Nov. 1, 1978, 7810861

Int. Cl.³ E02F *3/90*

U.S. Cl. 37—58 **11 Claims**



1. A suction device for a dredging craft comprising:

a first tube affixed to said craft for receiving dredging discharge;

a second tube having an upper end and a lower end, said second tube being positionable in a dredging position in which said tube extends along a side of the ship for inserting the lower end thereof in the water, said second tube having a dredging pump connected in the portion thereof that is immersed in the water when said second tube is in the dredging position; and

a displaceable tube element having an outboard end coupled to said second tube and an inboard end coupleable to said first tube, said tube element being displaceably mounted on the craft for coupling and disconnection movement generally transversely of the side of the craft between a first position in which said inboard end is coupled to said first tube for delivering dredging discharge and a second position in which said inboard end is disconnected from said first tube.

4,282,662

ROTARY TRENCH DIGGING MACHINE

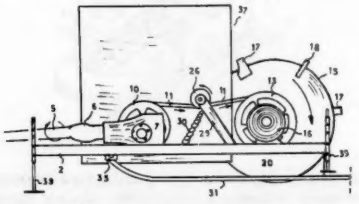
Louis Zucco, Maubourguet, France, assignor to Roger Bourgela, Mezin Sainte Maure de Peyriac, France

Filed Dec. 28, 1979, Ser. No. 108,038

Claims priority, application France, Jun. 30, 1978, 78 20435; Apr. 24, 1979, 79 10973

Int. Cl.³ E02F *5/08*

U.S. Cl. 37—94 **10 Claims**



1. A trench-digging machine, normally movable in a forward direction, comprising in combination:

a frame,

rotatable soil-moving means mounted on said frame for digging a trench in the soil, and including a disc equipped with cutter means mounted on its periphery, thereby operatively throwing up earth,

transmission-gear means mounted on said frame, coupled to said rotatable soil-moving means, and adapted to be pow-

ered by external drive means, said external drive means including a tractor,

control means, including ski-means mounted substantially horizontally on the underside of said frame to set the depth of the trench cut by said soil-moving means,

first and second supports for said ski-means located upstream and downstream of the cutter means—equipped disc, respectively, as defined by said forward direction of movement,

at least partially curved soil-deflector means mounted on said frame for deflecting earth operatively thrown up by said soil moving means,

rotatable and vertically movable trench side-surface processing means, including two rotatable grinding discs coaxially mounted on said frame downstream of said soil moving means for smoothing the side surfaces of said trench, respectively, said grinding discs being adapted to be powered by said external drive means, each grinding disc having a outwardly facing convex portion, and

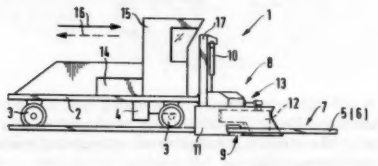
resilient means interposed between said grinding discs for urging them apart.

4,282,663

TRACK WORKING MACHINE WITH A BALLAST PLOW ARRANGEMENT

Josef Theurer, Vienna, Austria, assignor to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H., Vienna, Austria

Filed Dec. 17, 1979, Ser. No. 104,000
Claims priority, application Austria, Jan. 16, 1979, 324/79
Int. Cl.³ E01B *27/04*
U.S. Cl. 37—104 **8 Claims**



1. A track working machine comprising a ballast plow arrangement for distributing and profiling the ballast of a railroad track including two rails, the machine having a frame with a central axis extending between and substantially parallel to the rails, the ballast plow arrangement comprising

(a) two plows arranged on the machine frame for independent vertical adjustment, each of the plows being constituted by

(1) an integral plow plate bridging a respective one of the track rails and extending transversely to the central axis into the range thereof, the plow plates having adjacent ends in the range of the central axis and defining an acute angle with each other to form a plow arrangement extending over substantially the entire width of the track, and

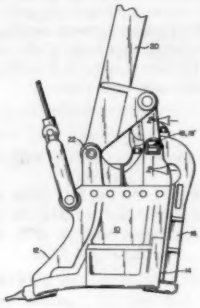
(2) a ballast regulating guide plate mounted on each plow plate end for selective adjustment between a rest position wherein the ballast regulating guide plate is fully covered by the plow plate on which it is mounted, seen in the direction of machine elongation, and an operating position wherein the ballast regulating guide plate projects beyond the central axis and the plow plate on which it is mounted.

4,282,664

DIPPER DOOR RETAINER

Arthur M. Thiele, Park Forest, and Herman A. Fabert, Jr., Homewood, both of Ill., assignors to Abex Corporation, New York, N.Y.

Filed Mar. 17, 1980, Ser. No. 130,885
Int. Cl.³ E02F *3/46, 3/81*
U.S. Cl. 37—118 R **4 Claims**



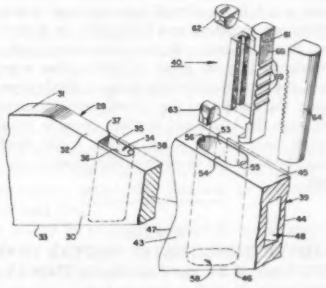
1. A fastening device for pivotally attaching a power shovel dipper to a power shovel handle and for pivotally attaching a door to the dipper, characterized by a first member of the fastening device, the first member pivotally attaching the dipper to the handle about a horizontal axis, a second member of the fastening device, the second member pivotally attaching the door to the dipper about said axis, wherein the first member can be removed independently of the second member to permit the dipper to be removed from the handle independent of the removal of the door from the dipper.

4,282,665

EXCAVATOR TOOTH ASSEMBLY

Robert N. Fletcher, Marion, and Damon N. Christian, Cardington, both of Ohio, assignors to Dresser Industries, Inc., Dallas, Tex.

Filed Feb. 6, 1980, Ser. No. 118,971
Int. Cl.³ B25G *3/36, 3/00*; F16B *3/00*
U.S. Cl. 37—142 A **33 Claims**



1. A tooth assembly for a working implement having a tooth shank provided with an opening therethrough comprising a tooth member mountable on said tooth shank, said tooth member having a socket for receiving said tooth shank therein and a pair of aligned openings registerable with said tooth shank opening when said tooth member is mounted on said tooth shank, and a pin assembly receivable in said registered openings in said tooth shank and tooth member when said tooth

member is mounted on said tooth shank, said pin assembly including a locking pin retainer insertable in said aligned openings, having a resilient pad engaging said tooth shank when said tooth member is mounted on said tooth shank, shims disposable between said tooth member and said locking pin retainer when said tooth member is mounted on said tooth shank and said locking pin retainer is inserted in said aligned openings, and a locking pin insertable in said aligned openings when said tooth member is mounted on said tooth shank, said locking pin retainer is inserted in said aligned openings and said shims are disposed between said tooth member and said locking pin retainer, engaging said locking pin retainer and tooth shank in wedging relation to urge said tooth member in positive engagement with said tooth shank.

4,282,666

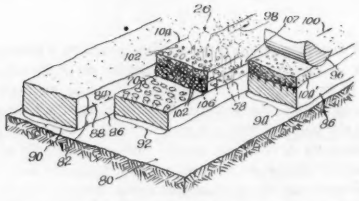
METHOD AND APPARATUS FOR BREAKING HARD SNOW

Claude R. Brandt, R.D. 2, Corinth Rd., Glens Falls, N.Y. 12801

Continuation-in-part of Ser. No. 593,732, Jul. 7, 1975, abandoned. This application Nov. 13, 1979, Ser. No. 93,225

Int. Cl.[3] **E01M** *5/00*

U.S. Cl. 37—195 **9 Claims**



1. A method of breaking hard snow in the form of a continuous main layer of substantial depth on the ground, comprising the steps,

pulling a rotary spiked tool, by and after a traction implement, having a plurality of spikes distributed around and along the tool, and thereby driving the spikes into the main layer to a predetermined depth and forming holes by the spikes reaching to that predetermined depth, so forming the holes of about two inches in width at the top, and tapering downwardly, the forming of the holes resulting in loosening and dislodging snow therefrom in the form of chunks, and smaller pieces, at least a substantial portion of the chunks being of a transverse width similar to that of the holes at the top of the holes,

forming a top layer of said loosened and dislodged snow, continuous in extent and being less, in quantity of mass, than the total mass of the main layer, and retaining a continuous bottom layer of hard snow containing the holes, the top layer thereby lying on the bottom layer, and

effecting the falling of the chunks and loosened snow, in part, into the holes and holding them in position on the bottom layer by the holes, against forces tending to dislodge the loosened snow from that position on the bottom layer.

4,282,667

ADVERTISING POSTER DISPLAY FRAME

Gaston M. Glade, 4 Bis, rue Jean-Jaures, 77410 Claye Souilly, France

Filed Oct. 25, 1979, Ser. No. 88,001

Int. Cl.[3] **G09F** *3/18*

U.S. Cl. 40—16 **7 Claims**

1. A document display unit, characterized in that it comprises a support plate, a framing border dimensioned so that its outer edge registers with said plate and its inner edge overlies said plate a selected distance from the plate edge, and mouldings having a resilient, generally U-shaped cross-section whose legs are shorter than the width of the border for engaging over the peripheral edge margins of said registering plate and border, said mouldings having inwardly projecting longitudinal ridges so that when the mouldings are engaged over the edge margins of the registering plate and border, they clamp the

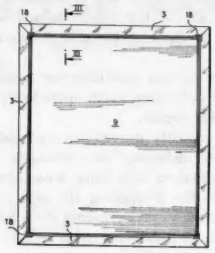


plate and border together on opposite sides of said ridge, thereby providing a selected spacing between the plate and border for the document to be displayed while exposing an edge margin of said border inboard of the mouldings all around the document.

4,282,668

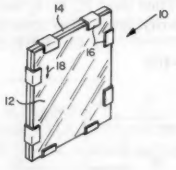
MOUNTING SYSTEM AND METHOD

Robert M. Jolkovski, Arlington, Mass., assignor to Product Planning & Development, Inc., Boston, Mass.

Filed Nov. 20, 1979, Ser. No. 95,997

Int. Cl.[3] **G09F** *1/12*

U.S. Cl. 40—155 **11 Claims**



1. A self-tightening frame clip mounting system comprising:

a U-shaped frame clip adapted to be slipped over a sandwich-like structure including an unprepared pierceable backing material;

a plow-type anchor assembly including a base having a front portion and teeth protruding from said base and angled downwardly towards said front portion; and,

spring biasing means connected between said front portion and said frame clip so as to cause self-tightening without clip dislocation when the teeth of said plow-type anchor are pressed into said backing material.

4,282,669

ILLUMINATED PICTURE FRAME

Jose Rieumont, 60 E. 34 St., Hialeah, Fla. 33013

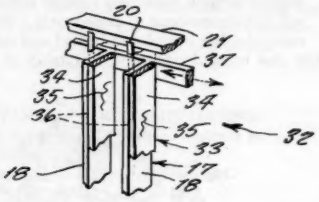
Filed Feb. 4, 1980, Ser. No. 118,087

Int. Cl.[3] **G09F** *19/14;* **A47G** *1/06;* **G09F** *11/30, 13/00*

U.S. Cl. 40—453 **1 Claim**

1. An illuminated picture frame, displaying a plurality of pictures, comprising, in combination, a rectangular frame around a central opening, a box behind said opening being open on its front side to said opening, a slotted, stationary, first grate in said box, a first picture on a front side of a rear wall of said box, a second and a third picture carried by said first grate, said first grate comprising a row of equally spaced-apart, equal width, flat slats positioned at right angles to said rear wall, said

second picture comprising a plurality of picture sections on a left side of said slats, while said third picture comprises a plurality of picture sections on a right side of said slats; a slotted, slidable, second grate comprising a plurality of equally spaced-apart, equal width, flat slats, slidable adjacent either said left or right sides of said first grate slats, and cover respectively either said second or third picture, and a fourth and fifth picture carried by said second grate, said fourth picture comprising a plurality of picture sections on a left side of said second grate slats, while said fifth picture comprises a plurality of picture sections on a right side of said second grate slats; and fluorescent lamp means carried on said frame for illumination of said pictures.

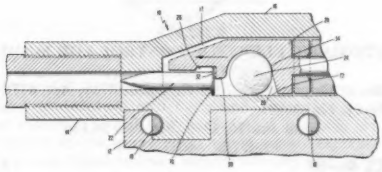


4,282,670

CONSUMABLE CASELESS AMMUNITION AND FIREARM FOR UTILIZING SAME

Ralph D. Junker, Columbus, N.C., assignor to Junker Systems, Incorporated, Tryon, N.C.

Filed Aug. 1, 1979, Ser. No. 62,794
Int. Cl.³ F41C *11/00, 15/12;* **F42B** *11/16*
U.S. Cl. 42—16 **22 Claims**



1. A firearm for firing projectiles by the detonation therebehind of a separate propellant cartridge, the projectile carrying a primer charge for igniting the propellant cartridge, said firearm comprising:

a body including a receiver, a barrel connected to said receiver, and a firing chamber communicating with a bore of the barrel;

means for introducing a projectile and a propellant cartridge therebehind into said body;

a bolt slidably mounted in said body, said bolt including laterally open pocket means for receiving said introduced projectile and cartridge and for advancing them to an armed position within said firing chamber;

a surface of said bolt being arranged to ignite said primer charge when said projectile is in said armed position.

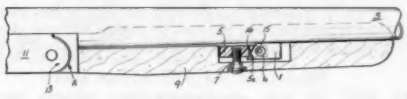
4,282,671

BOLT-ON FORE STOCK

John C. Wood, Baltimore, and Charles W. Thompson, Roseneath, both of Canada, assignors to Olin Corporation, New Haven, Conn.

Filed Feb. 28, 1979, Ser. No. 16,222
Int. Cl.³ F41C *23/00*
U.S. Cl. 42—75 A **4 Claims**

1. In a firearm having a receiver, a fore stock and at least one barrel, an improved means for adjustably attaching the fore stock to the remainder of the firearm; said means comprising: an attachment lug carried by the barrel and including a first inclined cam surface, a fore stock wedge co-operating with said attachment lug and including a second inclined cam surface, and means adjustably attaching said fore stock to said fore stock wedge so as to permit adjustment of the radial distance therebetween, said second cam surface riding on said first cam surface, such that radial displacement of said fore stock wedge, relative to said fore stock, results in a corresponding axial displacement of said fore stock relative to said lug, whereby said fore stock may be adjustably abutted against the receiver.

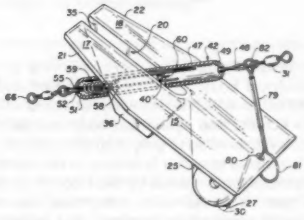


4,282,672

DIVING PLANE FOR FISHING

Joseph F. Neary, Novato, Calif., assignor to Troller Corporation, Corte Madera, Calif.

Continuation-in-part of Ser. No. 778,829, Mar. 17, 1977, Pat. No. 4,129,956. This application Apr. 10, 1978, Ser. No. 894,463
The portion of the term of this patent subsequent to Dec. 19, 1995, has been disclaimed.
Int. Cl.³ A01K *97/00*
U.S. Cl. 43—43.13 **7 Claims**



1. Diving apparatus for use with a towed fishing line comprising:

a release member serially connected between a leading segment and a trailing segment of said line, having a first portion with a trailing end connected to said trailing segment of said line and a second portion with a leading end connected to said leading segment of said line;

a planar platform being formed with a leading base area, a pair of trailing flukes separated to form a rearwardly extending open slot from said leading base member;

a connector mounted to said platform at said base and to said leading end of said second portion of said release member to permanently attach said platform to said leading segment of said line;

first and second fin members formed from and supported on said flukes at said slot extending normally to the planar surface of said platform for receiving snugly therebetween a trailing end of said second portion of said release member into said slot and for resisting side to side movement of said second portion of said release member in said slot;

a member spanning said slot, said first portion of said release member being looped at a leading end thereof about said slot spanning member;

said second portion of said release member including first and second flared legs, both said flared legs defining opposed arcuate members, said opposed arcuate members configured for mutual engagement therebetween of said

first portion of said release member where said first portion is looped about said slot spanning member;

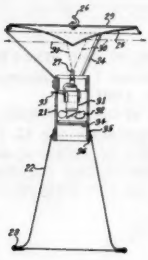
means tensioning said flared legs of said second portion of said release member towards one another, so that when a force less than a given force is supplied through said line to said platform, said release member portions remain engaged and said platform is held angularly to said line whereby said line sinks, and when a force greater than said given force is supplied through said line to said platform said release member portions disengage and said platform parallels said line whereby said line is permitted to rise.

4,282,673

FLYING INSECT TRAP

Dana A. Focks, and John W. Hock, both of P.O. Box 12852, Gainesville, Fla. 32604

Filed Jun. 21, 1979, Ser. No. 50,814
Int. Cl.[3] A01M *1/04, 1/06*
U.S. Cl. 43—113 **4 Claims**



1. An improved flying insect trap comprising an elongated hollow cylindrical body above which is suspended a cover-reflector and below which is removably attached a flexible bag of mosquito netting; said cylindrical body internally supporting an electric fan directed to propel air downwardly against a valve which is biased in such a fashion as to be closed when the fan is not operating and opened by the force of air flow when the fan is operating, said valve comprising two separately counterbalanced semicircular portions; said cylindrical body also supporting upstream from the electric fan a screen of a mesh large enough not to impede the passage of flying insects but small enough to prohibit the passage of beetles or similar large sized insects; said cylindrical body also supporting an electric light bulb upstream of the beetle screen; said cover-reflector, generally extending from immediately above said light bulb outwardly a sufficient distance to extend beyond the vertical projections of all lower portions of the trap; said light bulb being located generally below the center of said cover-reflector; and a source of electric power for operating said fan and said light bulb.

4,282,674

TOY CASH REGISTER

Steven P. Hanson, Brea, Calif.; Palmer J. Schoenfield, Evanston, and Harry Disko, S. Barrington, both of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Feb. 4, 1980, Ser. No. 118,622
Int. Cl.[3] A63H *33/30;* **G09F** *3/04;* **A63B** *71/00*
U.S. Cl. 46—39 **14 Claims**

1. A toy cash register for young children and the like, comprising:

a housing having an indicia display window in a wall portion thereof;

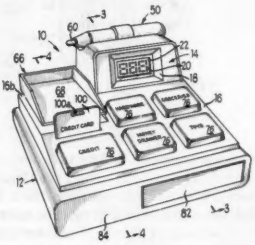
an indicia display element having a plurality of indicia on a face thereof mounted in said housing with a portion viewable through said window and movable relative to said window for displaying different indicia thereof;

electric motor means for moving said display element;

manually operable means for momentarily connecting said motor means with an electrical power source for moving said display element,

said display element comprising a disk mounted for rotation about a spin axis and driven by said motor means, said display window positioned radially outward of said spin axis and dimensioned to display only a limited radial segment of a face of said disk behind said window,

said disk being divided into a plurality of said radial segments, each segment having indicia thereon for display through said window when aligned therewith, and indexing means for aligning each of said radial segments with said window after said motor means is deenergized,



said indexing means comprising a plurality of radially extending elements on said disk between said segments and a fixed element mounted in said housing adjacent the path of travel of said radial elements rotating with said disk, said radial elements and said fixed element being magnetically attractable to center one of said radial elements in front of said fixed element whenever said disk is not rotating.

4,282,675

AUTOMATIC ELEVATOR CONTROL FOR MODEL GLIDER

Sheldon A. Stripling, Jr., 1001 Esplanade Way, Apt. 41D, Casselberry, Fla. 32707

Filed Jul. 16, 1979, Ser. No. 58,116
Int. Cl.[3] A63H *27/14*
U.S. Cl. 46—81 **1 Claim**

1. Automatic elevator control device for use with a power launched scale model glider, said glider having a fuselage and a pair of elevators, comprising:

elevator adjustment means disposed within said fuselage and adapted to adjust said pair of elevators to a neutral position or to a glide position, said means attached to said fuselage;

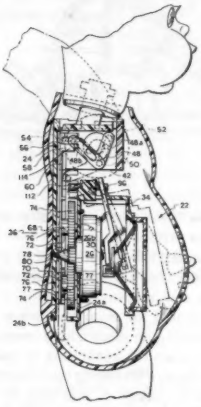
tension means connected to said elevator position adjustment means for holding said elevators in said glide position when said glider is in free flight;

leverage adjustment means associated with said tension means and said elevator position adjustment means for permitting optimum leverage for the model glider to be selected; and

tension adjustment means selectively adjustable to cause aerodynamic forces on said elevators during power launching of said glider to cause said elevators to assume said neutral position during said launching, said tension adjustment means including

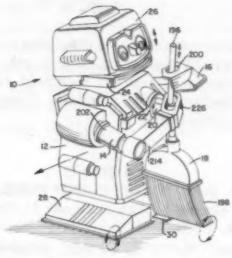
(a) a removable hatch block disposed in a hatch opening through said fuselage,
(b) a cleat attached to an inner surface of said hatch block, and
(c) a thread having a first thread end attached to said second elastic band end, and a second thread end free to be temporarily attached to said cleat so as to produce tension in said elastic band, the amount of such tension being finely adjustable by selection of the point of such temporary attachment along said second end of said thread.

4,282,676
MECHANICAL SOUND MECHANISM
Robert E. Davis, North Branford, Conn., assignor to Ideal Toy Corporation, Hollis, N.Y.
Filed Sep. 28, 1979, Ser. No. 79,842
Int. Cl.[3] A63H *5/00;* **G11B** *3/00*
U.S. Cl. 46—118 **7 Claims**



1. A toy doll comprising a body including at least one arm pivotally mounted on said body and a sound reproducing device mounted in said body including a rotatable grooved phonograph record, transmission means operatively connected between said record and said arm for rotating said record in a predetermined direction upon oscillation of said arm; a diaphragm support movably mounted in said body for movement between a first position adjacent said record and a second position spaced from said record, a diaphragm mounted on said diaphragm support above said record, a tone arm having a first end portion engaged with said diaphragm and a needle mounted therein for operative engagement with said record; means for mounting said tone arm for swinging movement in a plane generally parallel to the record to allow the needle to track in the grooved record and for movement towards and away from the record with said diaphragm support, said tone arm being located generally between the record and the diaphragm; means carried by said diaphragm support and engaged with said tone arm for moving the tone arm between said first and second positions with said diaphragm support and defining a start position for the tone arm in a predetermined location relative to the record while permitting said swinging movement of the tone arm; spring means for normally biasing said diaphragm support into said first position adjacent the record whereby the needle engages the record to reproduce sound upon rotation thereof and for normally biasing said tone arm towards said start position; said transmission means including means for selectively moving said diaphragm from said first position to said second position upon movement of said arm to a predetermined position relative to said body whereby the needle is disengaged from the record and returned to its start position; said spring means comprising a first spring for biasing the diaphragm support to its first position and a second spring for biasing the tone arm to said start position and against the record; and said means carried by the diaphragm support comprising a frame element having an elongated slot formed therein positioned above the record and extending along the plane of swinging movement of the tone arm, a portion of said tone arm being engaged in said slot.

4,282,677
AMBULATORY WORKER TOY
Yoichi Abe, Funabashi, Japan, assignor to Toybox Corporation and Wamy Corporation, both of, Japan
Filed Apr. 25, 1980, Ser. No. 143,639
Claims priority, application Japan, Apr. 17, 1979, 54-51746[U]
Int. Cl.[3] A63H *5/00, 11/00*
U.S. Cl. 46—118 **9 Claims**

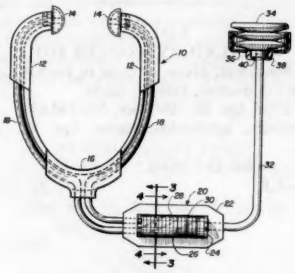


1. An ambulatory toy, comprising:
a chassis;
two leg members each having a foot member mounted at the bottom end thereof, the top end of each leg member being movably mounted on said chassis;
a power source mounted on said chassis, said power source including a rotatable gear, the axis of said gear being substantially perpendicular to a line connecting said foot members;
ambulatory transmission mechanism means operatively connecting said leg members to said power source for periodically moving said leg members vertically and angularly to propel said chassis sideways along a line connecting said foot members, said ambulatory transmission mechanism means including two pegs, each peg being affixed to a corresponding leg member between the top and bottom ends thereof, and two corresponding rotatably mounted elements operatively connected to said gear at different points on the periphery thereof, each rotatably mounted element having an offset hole therein to receive the corresponding peg, the axis of rotation of each rotatably mounted element being substantially perpendicular to a line connecting said foot members.

4,282,678
TOY TO SIMULATE HEARTBEATS AND A STETHOSCOPE
Kwok W. Tsui, Wanchai, Hong Kong, assignor to Arco Industries, Ltd., Kowloon, Hong Kong
Filed Apr. 25, 1980, Ser. No. 143,854
Int. Cl.[3] A63H *5/00, 29/16*
U.S. Cl. 46—175 R **4 Claims**

1. A toy to simulate a heartbeat and a stethoscope connected thereto to permit listening to said beat and comprising in combination, a double-ended bellows element closed at one end and the other end having an opening connected to one end of a flexible tube member, an open-ended cup-like member surrounding said one end of said tube and partially enclosing the end of the bellows connected to said tube, the closed end of

said bellows, when expanded, projecting beyond the open end of said cup-like member to permit pressure against said bellows to compress it, a flexible yoke having earpieces respectively on the outer ends of the arms thereof, additional branch tube



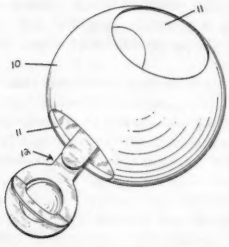
members interconnected to the other end of said flexible tube, and a sound-producing reciprocable member operable with a body interconnected in series with said tube members and actuated by operation of said bellows element to simulate the sound of a natural heartbeat.

4,282,679

INFANT'S TOY—RATTLE AND PEEK-A-BOO BALL

Lawrence B. Grubb, Monkton; Danny E. Simpson, Baltimore, both of Md.; Louis S. Hoffman, Morristown, N.J., and David M. Williams, Montreal, Canada, assignors to Johnson & Johnson Baby Products Company, New Brunswick, N.J.

Filed Nov. 20, 1979, Ser. No. 96,074
Int. Cl.[3] A63H *5/00*
U.S. Cl. 46—193 **7 Claims**



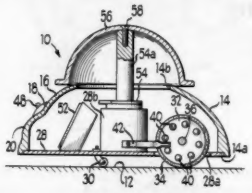
1. An infant's toy comprising, in combination:
a hollow ball;
an insert for said ball; and
retaining means for trapping said insert at least partially within said ball;
said hollow ball having a plurality of openings, the opening being of such a size that the hand of an infant may be readily inserted therethrough into the hollow ball;
said insert having an elongated stem portion with first and second enlarged portions at each end thereof, said enlarged portions being small enough to fit through said hollow ball openings;
said retaining means being provided within said hollow ball and having a maximum dimension sufficient to prevent said retaining means from being withdrawn from said ball through said hollow ball openings while being freely movable inside said ball;
said retaining means being provided with a hole large enough to accommodate the stem of said insert but small enough to prevent said enlarged portion of said insert from passing therethrough;
said insert being provided with one enlarged portion inside said hollow ball and with said stem passing through the hole of said retaining means and with said second enlarged portion extending out of a hollow ball opening;
whereby the configuration of the toy may be freely varied by having any of said insert enlarged portions pass through any of said hollow ball openings while said insert is still restrained by said retaining means.

4,282,680

MANUALLY OPERATED FREQUENCY CHANGER ON WHEELED TOY WITH LED'S

John V. Zaruba, Chicago, Ill., assignor to Marvin Glass & Associates, Chicago, Ill.

Filed Jan. 30, 1980, Ser. No. 116,941
Int. Cl.[3] A63H *33/26, 11/10, 5/00*
U.S. Cl. 46—227 **14 Claims**



1. An animated action toy for manually controlled movement over a support surface, comprises:
a hollow body having a front end portion and wheel means for rolling support of said body for movement in diverse directions over said support surface;
a control cap mounted for manual rotation relative to said body for controlling an electrical element therein;
electrical circuit means for generating an audible tone from speaker means thereof including said electrical element for controlling the frequency of said tone in response to the rotation position of said cap; and
switch means activated by rotation of said wheel means for periodically interrupting said tone generated by said circuit means.

4,282,681

ELECTRONIC WAND

Robert E. McCaslin, 1227 Coldwater Canyon, Beverly Hills, Calif. 90210

Filed Nov. 30, 1979, Ser. No. 99,186
Int. Cl.[3] A63H *33/26*
U.S. Cl. 46—228 **1 Claim**

1. An electronic wand adapted to be held in the hand comprising: a rod-like body provided with a hollow base at one end thereof and a light emitting diode at the opposite end thereof, said base defining a handle capable of being grasped by the hand; and an electronic circuit in said base and electrically coupled with said light emitting diode, said circuit including a

multivibrator having an output signal capable of oscillating at operating frequency to cause the light emitting diode to flash, said base having a pair of spaced terminals thereon coupled to the circuit, said terminals being bridged by the palm of the hand when the handle is grasped so that the palm provides a resistance forming part of the circuit, said resistance being variable as a function of hand pressure to cause a change in the frequency of flashing of the light emitting diode.

4,282,682

METHOD OF MULCHING WITH ANTISTATIC SYNTHETIC POLYMER FILM

Marcel Dalens, Carmaux, and Armand Haas, Mazingarbe, both of France, assignors to Societe des Plastiques de Carmaux Scasar, Carmaux and Societe Chimique des Charbonnages CdF Chimie, Paris, both of, France

Division of Ser. No. 748,214, Dec. 7, 1976, Pat. No. 4,221,830. This application Mar. 17, 1980, Ser. No. 130,591

Int. Cl.³ A01G *7/00*

U.S. Cl. 47—9 **2 Claims**

1. A method for preventing the virus degeneration of plants by virus-carrying aphides comprising mulching plants exposed to such degeneration with antistatic films obtained by the method consisting essentially of continuously printing over at least part of the surface of at least one side of a film of synthetic polymer with aluminum powder by suspending in solvent a composition consisting essentially of aluminum powder and a polyamide resin, setting said suspension down onto said film, and permitting said solvent to evaporate, said synthetic polymer of said film being selected from the group consisting of low density polyethylene, high density polyethylene, polypropylene, and polybutene.

4,282,683

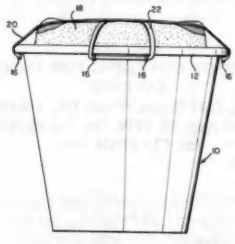
FLORAL ARRANGEMENT CONTAINERS

Bernard Frankel, 7957 Heather Rd., Elkins Park, Pa. 19117

Filed Oct. 17, 1979, Ser. No. 86,015

Int. Cl.³ A47G *7/07*

U.S. Cl. 47—41 R **10 Claims**



1. A flower pot for holding arrangements of cut flowers or the like, utilizing a charge of mounting material disposed in the flower pot, comprising:

an open-top container having an upstanding side wall;

a rim extending outwardly from the top of the side wall;

attachment means formed integrally with the rim and projecting downwardly from the underside of the rim;

elastic securing means passing over the mounting material and locking the material in place within said pot, being held by the attachment means; and,

a handle, having ends adapted for engaging the attachment means and overfitting the securing means, positively preventing separation of the securing means from the attachment means.

4,282,684

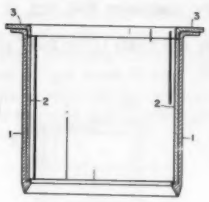
BAND TYPE PLANT TRANSPLANTER

Norvel J. McLellan, 1002 N. Main St., Pleasanton, Tex. 78064

Filed Aug. 1, 1979, Ser. No. 62,566

Int. Cl.³ A01G *23/04*

U.S. Cl. 47—73 **3 Claims**



1. A transplanting device comprised of a cylinder open at each end, terminating at its upper end in an outwardly directed peripheral flange, the lower end terminating in a sharpened edge for ground penetration, said lower end having an inner peripheral ledge, and means at said upper end providing an additional inner peripheral ledge, said ledges and the inner wall of said cylinder being adapted to seat a plant band therein.

4,282,685

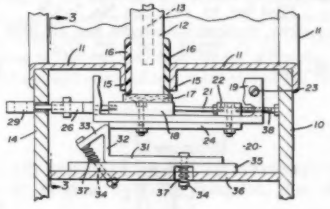
QUICK OPENING WINDOW FOR TRAILERS AND MOBILE HOMES

Brian Williams, 545 7th St., Struthers, Ohio 44471, and Richard Kratsas, 1408 E. Florida Ave., Youngstown, Ohio 44502

Filed Oct. 3, 1979, Ser. No. 81,474

Int. Cl.³ E05C *15/02*

U.S. Cl. 49—141 **3 Claims**

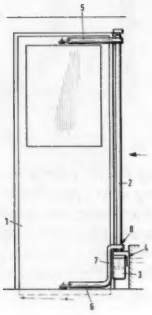


1. A quick opening window for trailer and mobile home walls in which a window opening in one of said walls is defined by a frame, the frame having a longitudinally extending slot therein communicating with a cavity in said wall below said window opening, a glazed sash movably positioned in said frame in said window opening in registry with said longitudinal slot, a support bar in said cavity beneath said glazed sash normally supporting said glazed sash in said frame, members having horizontally disposed surfaces receiving the end portions of said support bar in movable relation to said glazed sash and wherein a secondary support bar is attached to said support bar in spaced parallel relation thereto so that the area between said support bar and said secondary support bar defines an opening through which said glazed sash may move into said cavity and out of said window opening.

4,282,686
SWINGING DOOR FOR VEHICLES

Ingo Britzke, Kassel, and Manfred Horn, Kaufungen, both of Fed. Rep. of Germany, assignors to Gebr. Bode & Co., Kassel, Fed. Rep. of Germany

Filed Aug. 27, 1979, Ser. No. 70,156
Claims priority, application Fed. Rep. of Germany, Sep. 4, 1978, 2838486
Int. Cl.³ E05D *15/28;* **E05F** *15/04*
U.S. Cl. 49—253 **9 Claims**

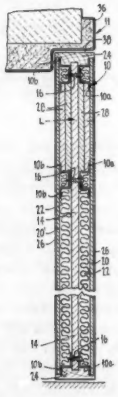


1. A swinging door construction for a vehicle comprising a turnable door panel, upper and lower swing arms connected to said door panel, a rotatable swing column having upper and lower ends, means connecting said swing arms to said swing column such that rotation of said swing column produces turning of said door panel, drive means supported at the lower end of said swing column for rotating said swing column, said lower swing arm being at a level below said drive means, said means which connects the lower swing arm to the swing column comprising a connecting means extending alongside and above said drive means to overlap said drive means and being secured to the swing column at a level above said drive means.

4,282,687
FIRE RESISTANT STRUCTURE

Peter F. Teleskivi, Wandin North, Australia, assignor to Jacmir Nominees Pty. Ltd., St. Kilda, Australia

Filed Sep. 11, 1979, Ser. No. 74,538
Claims priority, application Australia, Sep. 12, 1978, PD5909
Int. Cl.³ E06B *3/00, 3/82, 5/16*
U.S. Cl. 49—503 **8 Claims**

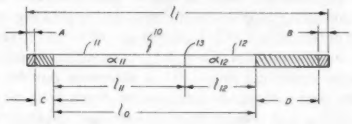


1. A fire resistant door or door leaf structure including a sub-frame, central panel means, and a pair of outer panel means attached to said sub-frame, and insulating material between each said outer panel means and said central panel means, said sub-frame comprising two spaced apart arrangements of vertically and horizontally extending sub-frame members between which the central panel means is situated, said sub-frame members being of substantially Z-shaped cross-section and including a flat central web and two flat flanges extending away at right angles from opposite sides of said central web and substantially parallel to each other, said central panel means being connected to one of said flanges and one of said outer panel means to the other flange, with the space defined between said central panel means, said outer panel means, and the central webs of said sub-frame members being filled with said insulating material.

4,282,688
ADJUSTABLE CTE GRAPHITE-EPOXY BAR

Michael K. Krim, Trumbull, Conn., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Jul. 5, 1979, Ser. No. 54,732
Int. Cl.³ E04H *9/00*
U.S. Cl. 52—1 **13 Claims**



1. A structural element having a specific overall expansivity along a given axis, comprising in combination;

a member comprising first and second sections integrally formed therewith,

said member comprising a plurality of layers of graphite epoxy composite,

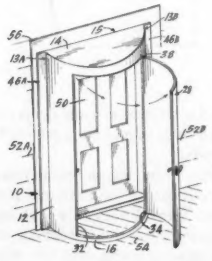
each of said sections having a length and coefficient of thermal expansion such that overall expansion or contraction is zero and wherein,

the layers in said first section have different wrap angles from the layers in said second section.

4,282,689
PORTABLE DOOR COVERING FOR INDOOR HEAT SAVINGS

George R. Royer, 2137 Ragan Woods Dr., Toledo, Ohio 43614

Filed Aug. 20, 1979, Ser. No. 68,060
Int. Cl.³ E04H *1/12*
U.S. Cl. 52—79.6 **2 Claims**



1. A portable door covering formed of one continuous piece of transparent plastic material for heat savings inside a building, said door covering device being adapted for placement in front of the building door leading to areas outside the building,

and wherein said door covering device has a frontal area and back portions respectively for placement orientation and wherein said door covering device comprises:

(a) a vertically extending member having a continuous frontal wall on the frontal area, and wherein said vertically extending member has a hollow portion open to spatial areas outside said vertically extending member, and wherein the hollow portion is open towards the back of said vertically extending member, and wherein the back portion of said vertically extending member is placed with one of each side thereof being on opposite sides of the building door with the hollow portion thereof facing a portion of the building door, said vertically extending member having flanged vertical sides in each side of said back wall for placement of said flanged sides flush against the adjacent building wall.

(b) openable and closable doorway means in said frontal continuous wall in the frontal area of said vertically extending member to provide exit and entrance means between said hollow portion and said frontal portion of said vertically extending member.

(c) a separately formed pivotable door in said doorway means to allow openings of closure of said doorway means.

4,282,690

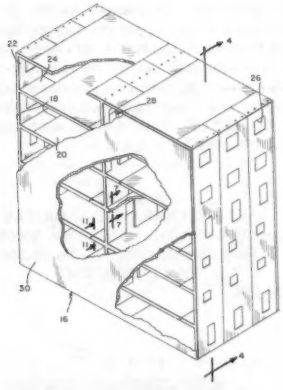
PRECAST BUILDING CONSTRUCTION

H. Joe Meheen, 1550 Dover, Suite 7, Lakewood, Colo. 80215

Filed Aug. 23, 1979, Ser. No. 68,940

Int. Cl.³ E04H *1/04*

U.S. Cl. 52—79.11 **2 Claims**



1. A wall tree unit for use in precast building construction in conjunction with one or more base slab units and one or more wall tree units, said wall tree unit comprising:

a generally planar wall segment having a substantially uniform thickness throughout and including a first end and a second end for forming a wall portion in a building;

a first generally planar cantilever member integrally joined to said wall segment and extending at right angles from said wall segment while extending the entire lateral width of said wall segment to form a floor or roof portion of a building;

a second generally planar cantilever member integrally joined to said wall segment, said second cantilever member extending at right angles from said wall segment in a direction opposite that of said first cantilever member while extending the entire lateral width of said wall segment, said second cantilever member being substantially coaxial with said first cantilever member to form another floor or roof portion of a building;

means formed in an outer edge of each of said first and second cantilever members for matingly receiving a base slab unit;

an insert formed in a first end of said wall segment;

a hoisting eye having an opening formed inwardly of said wall segment adjacent a second, opposite end of said wall segment;

an angle brace connected to said second end of said wall segment in the hoisting eye opening and having a first arm and a second arm, said second arm having an opening; and

a shaft insertable in said insert through said second arm opening for interconnecting two vertically adjacent wall trees with said insert being accessible through said hoisting eye opening.

4,282,691

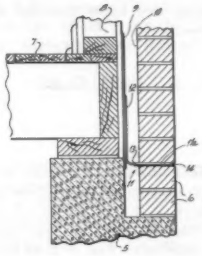
WEEP HOLE DEVICE

David G. Risdon, 1871 Greenpine Dr., Cincinnati, Ohio 45231

Continuation-in-part of Ser. No. 965,606, Dec. 1, 1978, abandoned. This application Sep. 26, 1979, Ser. No. 79,182

Int. Cl.³ E04B *1/70, 1/72*

U.S. Cl. 52—101 **5 Claims**



1. A weep hole device for a building comprising

a plastic tube having a water inlet end and a water outlet end, a stainless steel screen molded to the outlet end to provide a porous opening, and

an elongated durable porous member extending from the interior of the tube and outwardly from the water inlet end, said extending member preventing debris from clogging said inlet end and collecting water by sorption for feeding to the inlet end whereby the water may be channeled through the wall to the exterior of the building.

4,282,692

PRECAST CONCRETE BUILDING CONSTRUCTION

Richard H. Potthast, 5625 Tall Oaks Rd., Waunakee, Wis. 53597

Filed Nov. 22, 1978, Ser. No. 962,985

Int. Cl.³ E04B *5/02, 1/58*

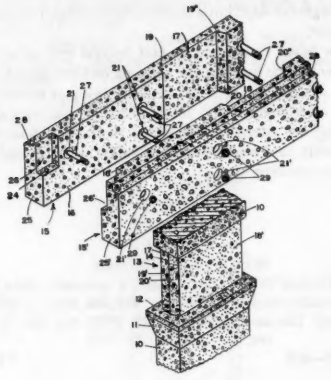
U.S. Cl. 52—236.3 **6 Claims**

1. In reinforced concrete building construction, the combination of

(a) at least one reinforced multi-story concrete column configured with at least one bearing surface projecting substantially horizontally, defining in said column a configuration of the interface between transversely extending key-in-keyway groove,

(b) at least one pair of elongated, horizontal pre-cast reinforced concrete beam members configured to comprise a configuration of the interface between transversely extending key-in-keyway groove complementary to that of said column and to bear upon said horizontal bearing surface conextensive with each other and vertically facing

each other continuously past said column and faying with opposite faces of said column,



(c) means securing said beam members substantially into interfacial contact.

4,282,693

PREFABRICATED HOUSE

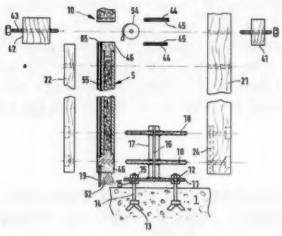
Richard Merklinger, Lange Str. 111, D-7570 Baden-Baden, Fed. Rep. of Germany

Filed Sep. 10, 1979, Ser. No. 74,145

Claims priority, application Fed. Rep. of Germany, Nov. 18, 1978, 2850085

Int. Cl.[3] **E04B** *1/00*

U.S. Cl. 52—282 **21 Claims**



1. Prefabricated house with wall and corner support posts erected on a foundation, these posts being connected in their upper zone by frames, as well as with wall elements inserted between the wall posts and corner posts, respectively, wherein each post includes:

a baseplate,

baseplate connecting means for connecting the baseplate to the foundation,

at least one vertical fishplate connected to the baseplate,

at least one inner stud and one outer stud,

and attaching means fixedly secured to said fishplate and extending therefrom in opposing directions for detachably attaching the inner and outer studs to the fishplate independently of each other and with a wall element clamped along its vertical sides between respectively one inner stud and one outer stud.

4,282,694

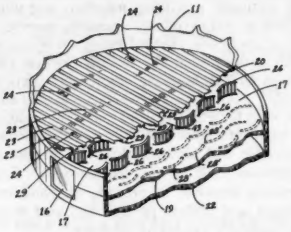
GRAIN BIN FLOOR SUPPORT SYSTEM

Harold C. Mead, Charles City, Iowa, assignor to Nixdorff Krein Industries, Inc., St. Louis, Mo.

Filed Nov. 8, 1979, Ser. No. 92,533

Int. Cl.[3] **E04H** *7/00*

U.S. Cl. 52—508 **9 Claims**



1. For use with a storage bin for storing grain or the like, an improved floor support system comprising a plurality of flooring elements jointly cooperable for providing a generally horizontal grain bin floor and a plurality of independent floor supports arranged in an assembly for supporting said floor, each floor support comprising a curvilinear lower rail serving as a base member formed for bearing against a supporting surface and defining thereon a curvilinear path, an upper rail member of curvilinear configuration like that of said lower rail, a plurality of load bearing spacers extending between said lower and upper rails for maintaining the latter in spaced, parallel relationship, said upper rail bearing against and contacting said flooring elements in a curvilinear path coincident with the curvilinear path defined on said supporting surface, said spacers transmitting load from said upper rail to said lower rail, said upper and lower rails each comprising a relatively long, thin, flat strip of structural metal, each said strip in plan being of narrow curvilinear form.

4,282,695

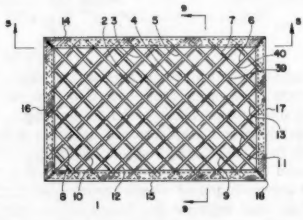
SELF-INTERLOCKING GRILLE

Hyok S. Lew, 7890 Oak St., Arvada, Colo. 80005

Filed Jul. 18, 1979, Ser. No. 58,556

Int. Cl.[3] **E04C** *2/42*

U.S. Cl. 52—668 **2 Claims**



1. A self-interlocking grille comprising:

(a) a first group of strips having a plurality of notches cut out along one edge of said strips at equal distance and a plurality of holes disposed on said strips in such a way that each of said holes is disposed at the mid-point between each of the adjacent pair of said notches, said strips of said first group of strips being arranged in a parallel configuration in a first direction;

(b) a second group of strips having a plurality of notches cut out along one edge of said strips at equal distance and a plurality of holes disposed on said strips in such a way that

each of said holes is disposed at the mid-point between each of the adjacent pairs of said notches, said strips of said second group of strips being arranged in a parallel configuration in a second direction transverse to said first direction, wherein each of said notches disposed on said strips of said second group of strips engages each of said notches disposed on said strips of said first group of strips in crossing each other and, thus forming a network;

(c) a first group of bars arranged in a parallel configuration in said first direction, each of bars of said first group of bars disposed intermediate each of the adjacent pairs of strips of said first group of strips and threaded through said holes on the strips of said second group of strips; and

(d) a second group of bars arranged in a parallel configuration in said second direction, each of the bars of said second group of bars disposed intermediate each of the adjacent pairs of strips of said second group of strips and threaded through said holes disposed on the strips of said first group of strips, wherein said bars of said second group of bars interlace said bars of said first group of bars.

4,282,696

METHOD FOR FABRICATING AND ERECTING UNITARY STRUCTURAL ELEMENTS

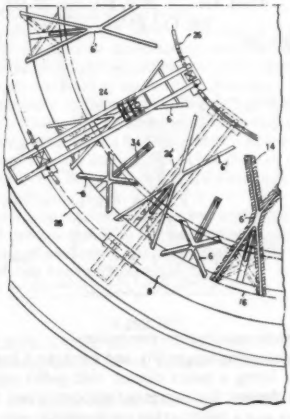
Bertrand Michel, Paris, France, assignor to Societe Nord-France d'Entreprises, Generales et de Constructions en beton arne, Paris, France

Filed Apr. 5, 1978, Ser. No. 893,279

Claims priority, application France, Apr. 6, 1977, 77 10361

Int. Cl.³ E04G *21/00*

U.S. Cl. 52—745 **3 Claims**



1. In a method of forming a cooling tower having a base ring which is spaced above the ground by means of a plurality of peripherally disposed supporting posts, the steps comprising:

(a) constructing in the ground a circular footing (**8**) of an outer diameter greater than the diameter of what will become said base ring,

(b) preforming on the ground a plurality of adjacent substantially horizontal supporting post structures (**6**) each of which is formed with two foot members having free ends and which diverge from a common portion of the post structure toward such locations on said footing such that each preformed post structure extends from the footing in a different radial direction relative thereto,

(c) disposing a plurality of pairs of horizontal pivotal shafts in a circular row (**16**) on said footing and positioning said pairs of pivotal shafts in such a manner with respect to said performed post structures that the distance between one of the pivotal shafts of each pair and the other pivotal shaft of the pair corresponds to the distance between the free ends of said divergent foot members, that the axis of said one pivotal shaft is perpendicular to a vertical radial plane passing between said one pivotal shaft and said other pivotal shaft, and that the axis of said other pivotal shaft coincides with the axis of said one pivotal shaft,

(d) securing the thus positioned pivotal shafts to the footing,

(e) securing the two free ends of the foot members to the corresponding pivotal shafts for pivotal motion thereabout,

(f) exerting successively on each post structure a continuous tractive force capable of pivoting the post structure to the supporting position thereof,

(g) temporarily supporting the thus raised post structure with a prop, and

(h) embedding the pivotal connection between the raised post structure and the footing in concrete.

4,282,697

INSULATING PANEL FOR ROOF COVERINGS

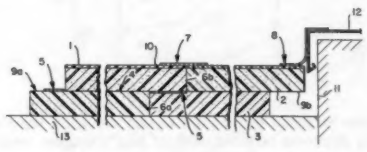
Paul Spielau, Troisdorf-Eschmar; Peter Pütz, St. Augustin; Richard Weiss, Troisdorf, all of Fed. Rep. of Germany, and Hansfritz Schraube, deceased, late of Hennef, Fed. Rep. of Germany (by Maria Katharina Schraube, sole heir and legal representative), assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany

Filed Apr. 27, 1979, Ser. No. 33,840

Claims priority, application Fed. Rep. of Germany, Apr. 27, 1978, 2818485

Int. Cl.³ E04D *1/28*

U.S. Cl. 52—746 **12 Claims**



1. A process for the production of a roof with a plurality of insulating panels, each panel comprising a core layer of a synthetic foam material bonded adhesively on its topside to a sealing thermoplastic layer or sheet throughout the surface area of the topside for the covering of roof structures, said core layer comprising at least two superimposed foam sheets of an elastic, closed-cell crosslinked polyolefin foam material, said sheets being bonded together throughout the contacting surface areas by flame laminating, the bonding surfaces of the foam sheets initially melted by said flame laminating together constituting a homogeneous polyolefin layer, which comprises mechanically joining the insulating panels to a substrate in a force-locking manner, joining the abutting insulating panels in rabbet joints, sealing off the butt joints of the insulating panels on the topside with sealing strips by adhesively bonding the panels together, and establishing a force-locking connection in the joints of the abutting insulating panels by the introduction of an adhesive and/or by welding.

4,282,698

LIQUID FILLING MACHINE

Guenter Zimmermann, 600 Casler Ave., Clearwater, Fla. 33515

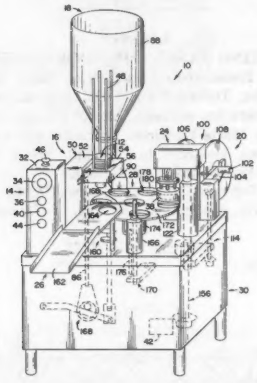
Filed Aug. 20, 1979, Ser. No. 67,735

Int. Cl.³ B65B *3/04, 61/02, 61/06;* B67B *3/04*

U.S. Cl. 53—282 **18 Claims**

1. A liquid filling machine for automatically filling and enclosing containers comprising a plurality of discrete stations disposed in operative relation relative to a container support including a turn table rotatably mounted on a base, said plurality of discrete stations comprises a container dispensing station configured to operatively retain a plurality of containers in stacked array, a liquid filling station, a foil supply station com-

prising a foil mounting means to operatively support a continuous roll of foil thereon, and a heat sealing station comprising a heat sealing head operatively coupled to said drive means to move said heat sealing station between an upper and lower position, said heat sealing station being disposed relative to said container support to seal foil to the container when in said lower position, said heat sealing head includes a bias means to normally bias said heat sealing head in a lower position, such that said heat sealing head engages said foil on the container before said cutting blade engages said foil, operatively mounted on said base, said turn table includes at least one container aperture formed thereon to selectively receive containers from said container dispensing station, said container retainer further includes an annular pocket extending upwardly about the periphery of said container aperture to operatively support the container on said turn table, said foil supply



station arranged to feed foil to said container support in line with direction of movement of said container support, said container support being operatively coupled to a drive means to selectively advance the container retained in said container retainer sequentially from said cup dispensing station to said liquid filling station to fill the container with liquid, from said liquid filling station to said foil supply station to cover the mouth of the container with foil and from said foil supply station to said heat sealing station to seal said foil to the container, said foil supply station further includes a cutting means comprising a cutting blade including a plurality of cutting elements extending across a portion of said cutting blade with said blade arranged to partially cut said foil when a container is supported on said annular pocket such that the foil cover is torn along said partial perforation when said container support is rotated.

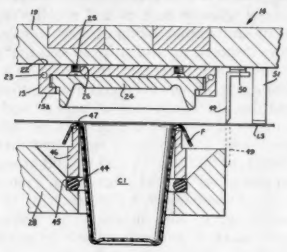
4,282,699

HEAT SEALING APPARATUS

Joseph J. Embro, Jr., Atlanta, Ga., assignor to The Mead Corporation, Dayton, Ohio

Filed Aug. 27, 1979, Ser. No. 69,945
Int. Cl.³ B65B *7/28;* **B67B** *3/04, 3/08*
U.S. Cl. 53—298 **10 Claims**

1. Container heat sealing apparatus comprising a heated reciprocable sealing block having a heat emitting surface, a sealing head mounted on said sealing block, mounting means for holding a part of said sealing head in close heat transferring slidable contact with said heat emitting surface whereby said sealing head is adapted to accommodate moderate misalignment of said reciprocable sealing block and a container to be sealed which is disposed in general alignment with the path of reciprocatory movement of said sealing block and said sealing head, a container carrier plate having resilient container support means disposed in the path of reciprocable movement of said sealing block, said resilient container support means including a groove formed in said carrier plate and a resilient O-ring disposed in said groove, and a sealing ring supported by



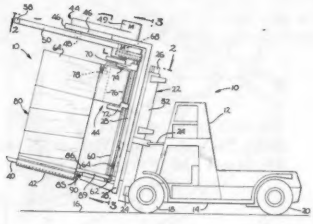
said O-ring and engageable with the flange of a container to be sealed and having a flanged open end.

4,282,700

STRETCH WRAPPER FOR PALLETIZED LOAD

Joseph Goldstein, 1325 Southwind Cir., Westlake Village, Calif. 91361

Filed Apr. 12, 1979, Ser. No. 29,331
Int. Cl.³ B65B *13/04*
U.S. Cl. 53—556 **14 Claims**



1. A stretch-wrap system comprising:

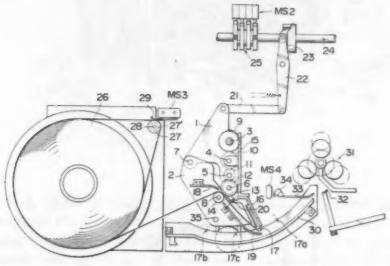
a load carrier for supporting and carrying a load, said load carrier being a pallet carrier, said pallet carrier having means thereon for engaging, supporting and transporting a pallet and a load carried on the pallet; and

a stretch wrapper mounted on said pallet carrier and positioned for wrapping a load carried on said pallet carrier with a web of stretch-wrap film, said stretch wrapper having a forwardly positioned pivot and a swinging arm pivoted on said pivot and positioned over said pallet-engaging means, a stretch-wrap roll support mounted on said swinging arm means for moving said swinging arm about said pivot and thereby moving said roll around the load, said swinging arm including means for varying the radius between said swinging arm pivot and said stretch-wrap roll support during the wrapping operation in response to the size of the load so that a stretch-wrap roll can be mounted on said stretch-wrap roll support and said swinging arm can carry a stretch-wrap roll on varying radius around the load for winding stretch-wrap film around the load so that the load can be wrapped with stretch-wrap film while the load is being carried and transported on said load carrier.

4,282,701
METHOD OF SETTING PACKAGING PAPER IN COIN PACKAGING MACHINE

Yorizo Miyazaki, and Katusuke Furuya, both of Tokyo, Japan, assignors to Laurel Bank Machine Co., Ltd., Tokyo, Japan

Filed Sep. 20, 1979, Ser. No. 77,276
Claims priority, application Japan, Sep. 22, 1978, 53/117104
Int. Cl.³ B65B *11/04*
U.S. Cl. 53—465 **2 Claims**



1. A method of setting a packaging paper in a coin packaging machine comprising a feeding and cutting assembly having a pair of rollers for feeding a packaging paper and a cutting blade for cutting the same, the cutting blade being positioned between a roll of packaging paper and packaging rollers for applying the packaging paper to coins to be packaged, said feeding and cutting assembly being movable to set its position in accordance with the diameter of coins to be packaged, which method comprises the steps of:

(a) setting the feeding and cutting assembly in a first predetermined position in accordance with the diameter of coins to be packaged simultaneous with memorizing the position of the feeding and cutting assembly;

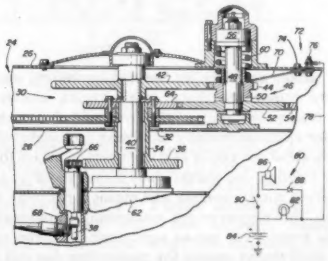
(b) automatically shifting the feeding and cutting assembly by control means to a second predetermined position for facilitating loading of a leading end of a new roll of packaging paper on the assembly between the pair of rollers in response to the detection of a small amount of a previous roll of packaging paper; and

(c) automatically returning the feeding and cutting assembly by said control means to the memorized position for the restarting of packaging operation when the loading of the new roll has been completed.

4,282,702
PICKER DRUM SLIP CLUTCH MONITOR

Steve H. McBee, Ankeny, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Jun. 19, 1980, Ser. No. 161,081
Int. Cl.³ A01D *75/18*
U.S. Cl. 56—10.3 **6 Claims**

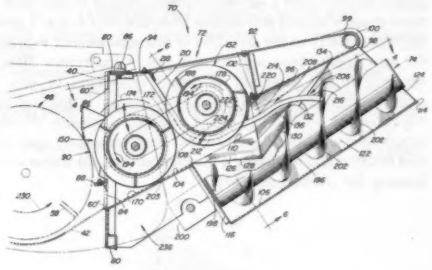


1. In a cotton harvester having a picker unit housing supporting an upright driven picker drum including picker means for removing cotton from cotton plants, drive assembly means operably connected to and for driving of the picker drum, said drive assembly means including torque responsive means movable from an operating position to an overload position in response to the torque required to drive the picker drum exceeding a preselected level for removing drive from the drum, and indicator means for providing a signal in response to the movement of the torque responsive means to the overload position.

4,282,703
FEEDER HOUSE FOR A CROP HARVESTER

John E. Wilson, Colona City, Ill., and Edward J. Hengen, Bettendorf City, Iowa, assignors to Deere & Company, Moline, Ill.

Filed Dec. 10, 1979, Ser. No. 102,090
Int. Cl.³ A01F *7/06, 12/00*
U.S. Cl. 56—14.6 **28 Claims**



1. In a mobile harvester including a crop processing means, and a forward mounted harvesting means equipped to gather crop material from a field and convergingly deliver it to a discharge opening of the harvesting means, the combination therewith of an improved means for conveying crop material from the harvesting means to the crop processing means comprising:

a feeder housing having walls and an inlet registering with the discharge opening of the harvesting means and an outlet having a width significantly less than that of the inlet and communicating with the crop processing means;

first conveyor means carried by the housing including a portion adjacent the inlet substantially spanning the width of the inlet and operable to engage and discharge rearwardly within the feeder housing over a transverse span substantially greater than that of the housing outlet crop material delivered to the discharge opening of the harvesting means;

second conveyor means of lateral extent significantly less than that of the first conveyor means carried by the housing downstream of and in a crop-receiving relationship with the first conveyor means and including a portion adjacent the outlet substantially spanning the outlet, for receiving crop material from the first conveyor means and operable to move it rearwardly within the housing to the outlet for delivery to the crop processing means; and

means for driving the conveyor means.

4,282,704

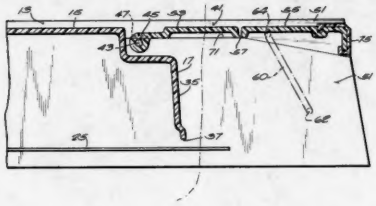
FILAMENT TRIMMER MOWER WITH FOLDING SHIELD

Myron T. Stevens, Kenosha, Wis., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed May 23, 1980, Ser. No. 152,835

Int. Cl.³ A01D *67/00, 75/20*

U.S. Cl. 56—320.1 **10 Claims**



1. A filament mower comprising a housing having a main portion including a depending wall and a housing extension movable between a generally horizontally outwardly extending guard position and a retracted position, said extension including a first segment hinged to said housing main portion about a first axis extending transversely to the direction of intended mower movement for upward movement from said guard position, and a second segment hinged to said first segment about a second axis spaced from said first axis and extending transversely to the direction of intended mower movement for movement about said second axis in the rotary direction opposite to the direction of rotary movement of said first segment about said first axis, resilient means biasing said housing extension toward said guard position, a plurality of wheels supporting said housing, a filament head carried by and within said housing and including a filament string, and means on said housing for rotating said head.

4,282,705

GRAPE PICKING MACHINE

Andre Fontan, 11 rue Republique, 32110 Nogaro, France

Filed Oct. 4, 1978, Ser. No. 948,547

Claims priority, application France, Oct. 10, 1977, 77 30639

Int. Cl.³ A01D *46/00*

U.S. Cl. 56—330 **37 Claims**

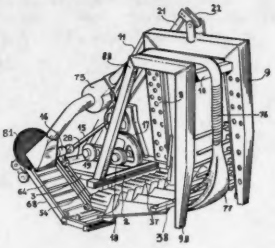
1. A grape picking machine for collecting a harvest comprising:

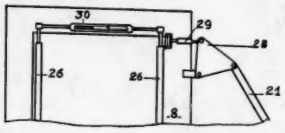
(a) means for detaching said harvest from grapevine trunks;

(b) at least two rows of partially overlapping, superimposed scales adapted to be positioned at the level of said trunks for recovering said harvest after detachment and for preventing said detached harvest from falling from said machine;

(c) means for evacuating said harvest from said machine, said evacuating means including means for dividing said harvest into waste and must by aspirating said must such that it becomes entrained in air, means for recycling said air and entrained must through said machine and for conducting said air to an outlet, said outlet comprising means both for blowing air to prevent said harvest from falling between said scale rows and to propel said harvest along said scales;

(d) a chassis carrying driving means for each of said detaching means, scales and evacuating means;





(e) a portico laterally positioned upon said chassis and comprising a rearwardly inclined front element; and

(f) beating means positioned on said front element.

4,282,706

SHAKER UNITS FOR HARVESTING MACHINES

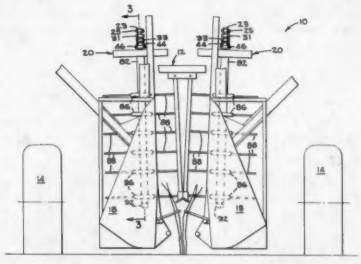
Franklin P. Orlando, Morgan Hill, Calif., assignor to FMC Corporation, San Jose, Calif.

Filed Nov. 2, 1979, Ser. No. 90,798

Claims priority, application United Kingdom, Mar. 8, 1979, 08161/79

Int. Cl.³ H01D *46/00*

U.S. Cl. 56—330 **4 Claims**

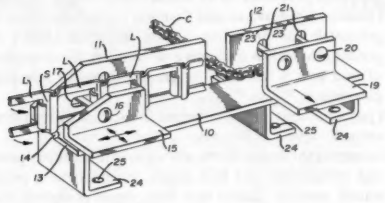


1. A shaker assembly for use in a harvesting machine, said assembly comprising shaker shaft means, circumferentially spaced tines projecting radially from said shaker shaft means, means for circumferentially oscillating said shaker shaft means and tines about the axis of said shaft means, means for unidirectionally rotating said shaker shaft means about its axis including a driven rotary member and means for driving said rotary member; the improvement comprising rotationally elastic, elongate torsion bar means concentric with the axis of said shaker shaft means, means for connecting one end portion of said torsion bar means to said driven rotary member, and means for connecting the other end portion of said torsion bar means to said shaker shaft means.

4,282,707
CHAIN BREAKING TOOL

Robert O. Fox, R.D. #7, Box 258, New Castle, Pa. 16102

Filed Oct. 18, 1979, Ser. No. 85,901
Int. Cl.[3] B21L *21/00*
U.S. Cl. 59—7 6 Claims

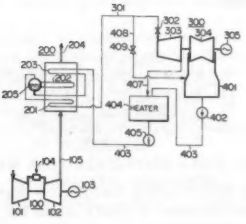


1. A chain breaking tool for use with detachable sprocket chains of the type with links which include a generally rectangular shaped frame with a male end or pintle and an open sided female end or sleeve at the other end, the pintle of one link being received in the sleeve of an adjoining link to connect the two, said tool comprising an elongated body member having at least one cross sectionally L-shaped clamp slidably positioned thereon for longitudinal and transverse movement, at least one vertically standing side section on said elongated body member adjacent said clamp and means for moving said clamp toward said side section to effect a clamping action on a chain positioned on its edge with its links disposed vertically therebetween, an offset tapered arcuate area formed in one end of said elongated body member and disposed between said clamp and said side section and beneath engaged ends of two links in said chain whereby downward movement imparted one of said two links brings the same into engagement with said offset tapered arcuate area to impart sideward motion to said link and facilitate its separation from the other of said two links.

4,282,708
METHOD FOR THE SHUTDOWN AND RESTARTING OF COMBINED POWER PLANT

Tetsuzo Kuribayashi, and Tsuguo Hashimoto, both of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 22, 1979, Ser. No. 68,562
Claims priority, application Japan, Aug. 25, 1978, 53/102913
Int. Cl.[3] F02C *7/00;* F02G *5/02*
U.S. Cl. 60—39.02 5 Claims



1. A method for a shutdown and restarting of a combined plant comprising in combination a gas turbine, a waste heat recovery boiler heated by a heat of exhausts from said gas turbine to generate steam, and a steam turbine driven by the steam generated by said waste heat recovery boiler, said method comprising the steps, which are followed when the plant is restarted following temporary shutdown, of:

(1) shutting down the steam turbine while the gas turbine is still operating at high load by reducing a load applied to the steam turbine before reducing the load applied to the gas turbine, when the load applied to the entire plant is to be reduced;

(2) allowing excess main steam produced by the load reduction and shutdown of the steam turbine to flow through a bypass system to a condenser without causing the excess main steam to flow through the steam turbine;

(3) maintaining metal of the steam turbine at a temperature level substantially equal to a temperature at which the metal is maintained during operation of the steam turbine by supplying steam, as gland sealing steam, of a temperature level substantially equal to a temperature level of the metal of the steam turbine in operation at the time of load reduction and shutdown of the steam turbine;

(4) shutting down the gas turbine after further reducing the gas turbine load to a level lower than a level attained in said steam turbine shutting down step;

(5) starting the gas turbine first to increase the load applied to the plant when the plant is to be restarted;

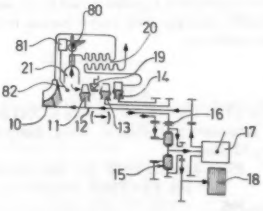
(6) maintaining the metal of the steam turbine at a temperature level substantially equal to the temperature level of the metal of the steam turbine attained during operation of the latter, by supplying steam of a temperature level substantially equal to a temperature level of the metal of the steam turbine attained during operation of the latter as gland sealing steam for the steam turbine; and

(7) starting the steam turbine by the steam generated by the waste heat recovery boiler to increase the plant load.

4,282,709
GAS TURBINE-TRANSMISSION PLANT

Sven-Olof Kronogard, Karstorpsvägen 31, Lomma, Sweden (23400)

Continuation-in-part of Ser. No. 834,920, Sep. 20, 1977, abandoned. This application Jul. 20, 1979, Ser. No. 59,163
Claims priority, application Sweden, Sep. 24, 1976, 7610578
Int. Cl.[3] F02C *3/10*
U.S. Cl. 60—39.16 S 4 Claims



1. A gas turbine-transmission plant which operates at a temperature T_{max} at full load comprising:

(A) a combuster,

(B) adjustable fuel supply means to said combuster,

(C) said fuel supply means being adapted to provide, during part load and at a given turbine speed, a gas temperature, upstream of all turbine rotors, being substantially equal to T_{max},

(D) a compressor part comprising a compressor and at least one turbine rotor driving the same for delivering air to said combustor,

(E) a turbine part comprising at least one power turbine rotor connected to a load, and at least one auxiliary rotor arranged in a common gas flow passage from said combustor to thereby receive gas flow directly therefrom and rotating in a direction opposite thereto,

(F) said power turbine rotor having conventional reaction type blades, and said auxiliary rotor having vanes with a symmetrical air foil cross section and with a rounded and aerodynamically favorable inlet edge arranged to form a vane grid providing essentially no expansion,

(G) transmission means interconnecting said auxiliary rotor

and compressor driving turbine rotor, and arranged to permit transfer of torque in both directions, and

(H) means for determining the rotational speed of the said auxiliary turbine rotor, to impose a load on said power turbine when the plant is operating at part load, to make said auxiliary rotor act as a fan.

4,282,710

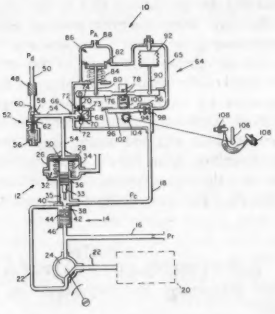
CONTROL SYSTEM AND METHOD FOR A PRESSURE RESPONSIVE FUEL REGULATOR

William W. Avant, Paradise Valley, Ariz., assignor to The Garrett Corporation, Los Angeles, Calif.

Filed Feb. 26, 1979, Ser. No. 15,252

Int. Cl.³ F02C *9/04*

U.S. Cl. 60—39.28 R **35 Claims**



1. A control system for a pressure-responsive fuel flow regulator, comprising pressure calculation means for providing a predetermined output control pressure; means for providing a source of ram air pressure; valve means movable between a first position for coupling the control pressure to the regulator, and a second position for coupling the ram air pressure to the regulator for controlling regulator fuel flow; and switch means for controllably shifting said valve means between said first and second positions.

4,282,711

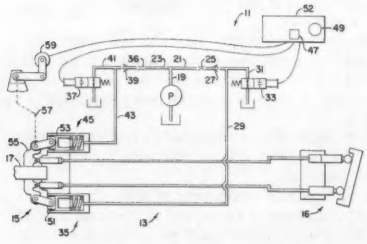
HYDROSTATIC TRANSMISSION CONTROL SYSTEM

Ronald L. Branstetter, Dubuque, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Jul. 26, 1979, Ser. No. 61,140

Int. Cl.³ F16H *39/46*

U.S. Cl. 60—395 **15 Claims**



1. In combination a hydrostatic transmission having a fluid responsive variable displacement pump unit in fluid communication with a motor, a pair of pressure responsive servo means for varying the displacement of said pump unit, a source of displacing fluid open to said pair of pressure responsive servo means, a reservoir, a first and second electrically responsive normally open valve means connecting said source and said pair of pressure responsive servo means to said reservoir, and an electric control circuit for controlling said first and second electrically responsive valve means, wherein the electrical control circuit comprising:

(a) first means for generating a first electrical signal potential proportional to desired displacement of said unit;

(b) second means for generating a second electrical signal potential proportional to actual displacement of said unit;

(c) means responsive to said first and second electrical signal potentials for providing a first electrical output signal potential which is indicative of whether the displacement of said unit is less than or greater than the selected displacement;

(d) power output amplifier means for activating said first and second valve means; and,

(e) comparator means for receiving said first output potential and comparing said first output potential to a predetermined amount, should said first output potential indicate said unit displacement is less than said desired displacement and said first output potential is greater than said predetermined amount, said comparator means generates a second output potential sufficient to cause said power output amplfier means to activate said first valve means to initiate displacement in one direction of said unit, should said first output potential indicate said unit displacement is greater than said desired displacement and said first output potential less than said predetermined amount said comparator means generates a third output potential sufficient to cause said power output amplifier means to activate said second valve means to initiate displacement in another direction of said unit, should said first output potential be within a predetermined range of said predetermined amount said comparator means generates a second and third output potential sufficient to cause said power output amplifier means to activate said first and second valve means to maintain achieved displacement.

4,282,712

DEVICES FOR EXTRACTING ENERGY FROM WAVES

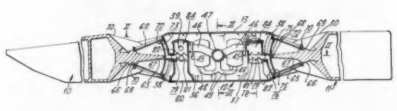
Cecil A. Comyns-Carr, Bath, and Michael J. Platts, Willingham, both of England, assignors to The Secretary of State for Energy in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Nov. 7, 1979, Ser. No. 92,200

Claims priority, application United Kingdom, Nov. 17, 1978, 450748/78

Int. Cl.³ F03B *13/12*; E02B *9/08*

U.S. Cl. 60—500 **11 Claims**

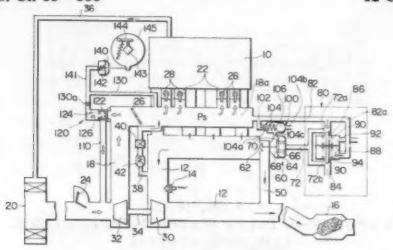


1. A device for extracting energy from waves on a liquid, comprising two members hingedly connected one to another so as to allow angular relative motion between the members in response to waves, at least one of the members being of buoyant construction, and pump means between said hingedly connected members for displacing fluid in response to said relative motion, wherein the improvement comprises, said pump means comprising a vane pump having a pump chamber defined by one end of one of the hingedly connected members, and a vane defined by the adjacent end of the other hingedly connected member and extending therefrom into said pump chamber so as to be displaced angularly in said pump chamber by said relative motion, thereby to displace said fluid.

4,282,713
CONTROL FOR SUPERCHARGER TURBINES

Mitugu Antoku, and Fumio Saito, both of Yokohama, Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed May 26, 1978, Ser. No. 910,145
Claims priority, application Japan, May 26, 1977, 52-60509
Int. Cl.³ F02B *37/00*
U.S. Cl. 60—600 **12 Claims**



1. A waste gate control for an engine turbosupercharger having a turbine driven by gases exhausted from the engine to operate a compressor for supplying induction air to the engine through a throttle valve, said control comprising

a passage for bypassing exhaust gases around the turbine,

valve means in said passage for controlling fluid flow therethrough,

means normally biasing said valve means toward a closed position, and

means for operating to force said valve means to an open position in response to the induction pressure exceeding a first predetermined magnitude and the induction pressure falling below a second predetermined magnitude lower than said first predetermined magnitude,

wherein said means for forcing said valve means comprises a first controller operatively responsive to the induction pressure for producing

first, second and third pressure signals when the induction pressure exceeds said first predetermined magnitude, when the induction pressure falls below said second predetermined magnitude, and when the induction pressure is between said first and second predetermined magnitudes, respectively,

a second controller operatively responsive to the induction pressure for producing fourth and fifth pressure signals when the induction pressure exceeds said first predetermined magnitude and when the induction pressure falls below said second predetermined magnitude, respectively,

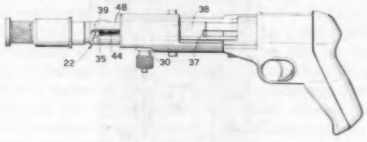
and means operable in dependence on the pressure difference between the pressure signals produced by said first and second controllers for moving said valve means to an open position.

4,282,714
EXPLOSIVE ACTUATED TOOLS FOR DRIVING ANCHORING MEMBERS

Guilio Fiocchi, Milan, Italy, assignor to Berfi S.p.A., Milan, Italy

Filed Jan. 10, 1980, Ser. No. 111,164
Claims priority, application Italy, Jan. 23, 1979, 20575/79[U]
Int. Cl.³ B25C *1/14*
U.S. Cl. 60—632 **4 Claims**

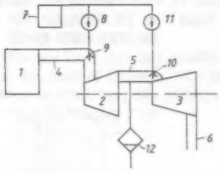
1. Explosive actuation tool for driving anchoring members, of the type comprising a barrel slidable in a breech tube, having a central bore in which a driving piston is slidably housed, the rear end of the said barrel forming a firing chamber adapted to receive an explosive cartridge, said tool further comprising a trigger and firing pin mechanism and an extraction and ejection mechanism, characterized in that the extraction and ejection mechanism for the cartridge case after the firing comprises a sleeve slidably mounted to the said barrel and having a half bottom which is complementary with respect to a half bottom provided in the end of the barrel, so as to form a cartridge chamber which is perimetrally perfectly closed, said sleeve comprising a stop pawl, radially protruding and slidably engaged in a groove formed in the internal surface of the said breech tube, so as to stop at a predetermined point the sliding displacement of the sleeve together with the barrel, and spring means opposing to the sliding motion of the sleeve with respect to the barrel in the slipping off motion of the barrel with respect to the breech tube.



4,282,715
METHOD AND APPARATUS FOR PREVENTING CORROSION IN A STEAM POWER PLANT

Bengt Edwall, Svartesjo, S-274 CC Skurup, and Anders Kullendorff, Linnevagen 33, S-61600 Aby, both of Sweden

Filed Nov. 13, 1978, Ser. No. 960,017
Claims priority, application Sweden, Nov. 11, 1977, 7712753
Int. Cl.³ F01K *21/06*
U.S. Cl. 60—646 **13 Claims**



1. A method of operating a steam power plant with corrosion prevention, comprising the steps of:

generating a supply of steam;

adding hydrogen peroxide to the steam;

supplying the steam to a first turbine; and,

driving the first turbine with the steam.

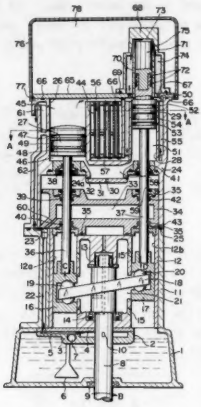
4,282,716
STIRLING CYCLE REFRIGERATOR

Yutaka Momose, Toyota, and Kazuaki Nakamura, Kariya, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed May 16, 1979, Ser. No. 39,608
Claims priority, application Japan, May 16, 1978, 53-58109
Int. Cl.³ F25B *9/00*; F01B *29/10*; F02G *1/04*
U.S. Cl. 62—6 **5 Claims**

1. Stirling cycle refrigerator which comprises a pair of compression chambers provided at diametrically opposite positions, a pair of compressor pistons positioned respectively in said compression chambers for reciprocating movement therein, a pair of displacer chambers provided at diametrically opposite positions with each other, said displacer chambers being located along a diametrical line which makes an angle of 90° with respect to a diametrical line along which said compression chambers are located, a pair of displacer pistons positioned respectively in said displacer chambers for reciprocating movement therein, rotatable swash plate means associated

with said compressing and displacer pistons for producing reciprocating movements of the pistons, one of said compressing chambers being connected with one of said displacer cham-



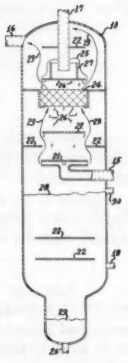
bers, and the other compression chamber being connected with the other displacer chamber so that stirling cycles are effected when the swash plate means is effected.

4,282,717

OIL SEPARATOR AND HEAT EXCHANGER FOR VAPOR COMPRESSION REFRIGERATION SYSTEM

Henry B. Bonar, II, 4939 Morven Rd., Jacksonville, Fla. 32210

Filed Nov. 19, 1979, Ser. No. 95,499
Int. Cl.³ F25B *43/02*
U.S. Cl. 62—84 **13 Claims**



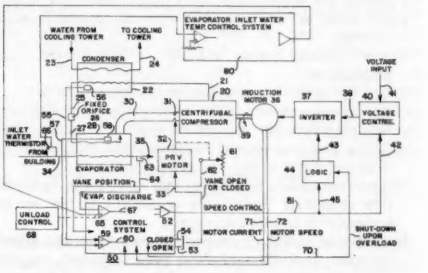
1. A method of removing oil from the refrigerant in refrigeration system including a motor driving a compressor for compressing the refrigerant vapor, a condenser for condensing the compressed vapor to a liquid, and an expansion device and an evaporator for expanding and evaporating the liquid to a vapor; the method comprising introducing hot compressed refrigerant vapors having a predetermined pressure and containing entrained droplets of oil into a confined space, introducing cool liquid refrigerant under sufficient pressure to overcome the pressure of the hot compressed vapors into the confined space spacedly above the introduction of the hot compressed refrigerant vapors such that droplets of the liquid refrigerant fall downwardly by gravity in direct contact with the upwardly flowing hot compressed refrigerant vapors to effect a countercurrent heat exchange therebetween, subjecting the vapors while in said confined space to sudden changes in flow direction and to sudden changes in velocity to effect separation of the entrained oil droplets of oil from the vapors with the oil droplets falling by gravity into the bottom of the confined space into a pool of refrigerant liquid, separating the oil from the pool of refrigerant liquid, extracting the separated oil to lubricate the motor and compressor, and extracting the refrigerant liquid from the pool to the expansion device and the evaporator.

4,282,718

EVAPORATOR INLET WATER TEMPERATURE CONTROL SYSTEM

Kenneth J. Kountz, Hoffman Estates, Ill.; Richard A. Erth, and Dean K. Norbeck, both of York, Pa., assignors to Borg-Warner Corporation, Chicago, Ill.

Filed Sep. 12, 1979, Ser. No. 75,041
Int. Cl.³ F25B *5/00;* **F25D** *5/00*
U.S. Cl. 62—115 **16 Claims**



1. An evaporator inlet water temperature control system for a refrigeration system including a compressor having an adjustable capacity control means, a condenser and an evaporator having an inlet receiving fluid from a load and an outlet discharging chilled fluid to be returned to said load comprising:

means for sensing the temperature of said fluid at the evaporator inlet,

means for sensing the temperature of said fluid at the evaporator outlet,

a first control circuit means coupled to said outlet fluid temperature sensing means to regulate said adjustable capacity control means in response to the temperature of said outlet fluid, said control circuit having a variable set point,

means for establishing a set point temperature for the fluid at the evaporator inlet, and

a second control circuit means coupled to said inlet fluid temperature sensing means and said set point temperature means to generate a differential electrical signal as a function of the difference between the sensed temperature and the set point temperature of the fluid,

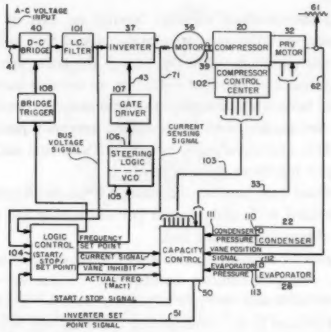
said second control circuit means having an output coupled to said first control circuit and dependent on said electrical signal for adjusting the variable setpoint and regulate the adjustable capacity control means to maintain the inlet set point temperature.

4,282,719

CONTROL SYSTEM FOR REGULATING LARGE CAPACITY ROTATING MACHINERY

Kenneth J. Kountz, Hoffman Estates, Ill.; Richard A. Erth, and Dean K. Norbeck, both of York, Pa., assignors to Borg-Warner Corporation, Chicago, Ill.

Filed Sep. 12, 1979, Ser. No. 75,044
Int. Cl.³ F25B *1/00*
U.S. Cl. 62—115 **4 Claims**



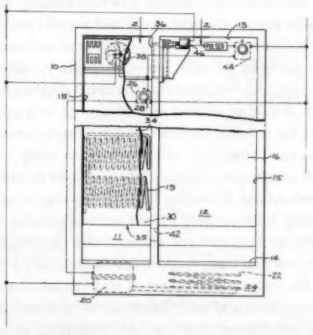
1. A control system for a refrigeration system including a compressor, a condenser and an evaporator, all connected in a closed refrigeration circuit, which compressor includes an adjustable capacity control means, means for regulating the adjustable capacity control means, an electrical prime mover connected to drive the compressor, and means for regulating the speed of the prime mover, which control system includes means for sensing the absolute condenser pressure and the absolute evaporator pressure and for regulating the adjustable capacity control means and the electrical prime mover in an energy-conservation manner while avoiding compressor surge in accordance with a control signal varying as a function of the expression (Pcd−Pev/Pev), where Pcd is the absolute condenser pressure and Pev is the absolute evaporator pressure.

4,282,720

REFRIGERATOR AIR BAFFLE CONTROL

Richard L. Stottmann, and Gerhard K. Losert, both of Louisville, Ky., assignors to General Electric Co., Louisville, Ky.

Filed Aug. 29, 1979, Ser. No. 70,565
Int. Cl.³ F25D *17/00*; **F16K** *31/44*
U.S. Cl. 62—180 **18 Claims**



1. A refrigerator cabinet including a divider wall separating said cabinet into a freezer and fresh food compartments;

a housing arranged on said divider including a passageway communicating with said compartments;

a valve member arranged in said housing for controlling the flow of air between compartments, said valve including axial members on the longitudinal ends thereof being arranged in said housing for allowing rotational movement of said valve in said passageway between set open and closed positions, one of said axial members having a drive end extending through said housing;

valve positioning means on said drive end including a first and second ratchet means, each having a like number of teeth being spaced circumferentially so that the teeth of one of said ratchets are positioned intermediate the other;

a solenoid mounted on said housing including an armature arranged for perpendicular movement relative to said axial members between a normal retracted position and a momentary extended position;

actuating means on said armature including a first pawl dimensioned to engage a tooth on said first ratchet for imparting initial rotational movement to said valve during movement of said armature in one direction and a second pawl dimensioned to engage a tooth on said second ratchet for imparting a secondary continuing rotational movement to said valve during the return movement of said armature in the other direction to complete movement of said valve between its set positions;

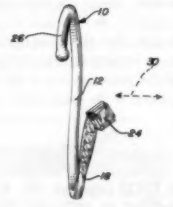
means for locking said valve in either of its set positions when said armature is in its deenergized position, including stop means on said drive end having spaced teeth, holding means movable with said armature being dimensioned to engage one of said teeth on said stop means when said solenoid is in its deenergized position to hold said valve in its set positions.

4,282,721

EAR ORNAMENT

Sally A. Roach, 222 Pearson East, Apt. 301, and Rob R. Hansen, 70 E. Walton, Apt. 4D, both of Chicago, Ill. 60611

Filed May 1, 1980, Ser. No. 145,426
Int. Cl.³ A44C *7/00*
U.S. Cl. 63—14 R **5 Claims**



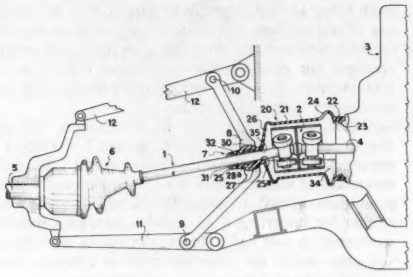
1. An ear ornament which comprises an elongated, curved rod member defining a stable frame proportioned to easily rest on an ear without discomfort, said member including a central body of generally C-shape, proportioned to reside behind an ear; a lower portion attached to one end of said C-shaped central body, said lower portion curving rearwardly from said central body through an arc, and proportioned to curve about the front of an earlobe to extend at least substantially across the entire earlobe; and an upper portion attached to the other end of said C-shaped central body to reside against the top of the ear and to curve toward the front of the ear in retentive relation thereto, said curved rod member defining a three-dimensional irregular spiral structure, with the irregular spiral extending in a dimension normal to said generally C-shape of the central body, said lower portion extending in said dimension, substantially without retrogression, to one side of the central body, said upper portion extending in said dimension, substantially without retrogression, to the other side of said central body.

4,282,722

DEVICE FOR PROTECTING IN PARTICULAR THE ARTICULATION AND BEARING OF A TRANSMISSION SHAFT

Michel A. Orain, Conflans Ste Honorine, France, assignor to Glaenzer Spicer, Poissy, France

Filed Mar. 12, 1979, Ser. No. 19,898
Claims priority, application France, Apr. 26, 1978, 78 12336
Int. Cl.³ F16D *3/84*
U.S. Cl. 64—32 F **16 Claims**



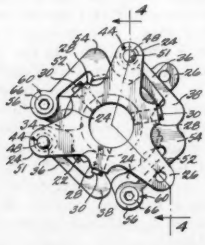
1. A structure comprising in combination a drive unit having an output shaft, a transmission shaft, an articulation interconnecting the output shaft and the transmission shaft, a support device combined with the unit, a protecting device comprising a gaiter of a deformable material which surrounds the articulation, said gaiter comprising a body surrounding the articulation, a mounting flange extending an end of the body, at least one fold interposed between the body and the flange, an elastomeric neck portion extending an end of the body remote from said mounting flange, means rigidly mounting the flange on the unit, the neck portion having a passageway through which the transmission shaft extends and being combined with the support device so as to be supported by and held longitudinally in position in the support device, a bearing mounted on the transmission shaft and held in the passageway of the neck portion with the elastomeric neck portion interposed between the bearing and the support device and engaging the bearing and the support device so that the bearing is resiliently supported, and sealing means in sealing contact with the transmission shaft and connected to the passageway of the neck portion on a side of the bearing remote from said mounting flange.

4,282,723

COUPLING

Richard Schmidt, 11525 Islandale Dr., Cincinnati, Ohio 45240

Filed Oct. 9, 1979, Ser. No. 82,928
Int. Cl.³ F16D *3/70*
U.S. Cl. 64—19 **19 Claims**



1. A coupling for uniformly transmitting torque from a first shaft to a second shaft while accommodating parallel, angular and/or axial misalignment between the axes of said first and second shafts, said coupling comprising:

a first annular member having means for fixedly securing the same to the first shaft for rotation therewith about an axis of rotation coincident with the axis of the first shaft,

a second annular member having means for fixedly securing the same to the second shaft for rotation therewith about an axis of rotation coincident with the axis of the second shaft,

a third intermediate member having an axis of rotation aligned with the axes of rotation of said first and second annular members when the axes of the latter are aligned,

said intermediate member including an annular portion disposed between said first and second annular members and first and second pairs of elongated generally parallel arm portions operatively associated with said first and second annular members respectively,

each of said arm portions including a fixed end fixedly interconnected with said annular portion within the axial extent thereof and a free end,

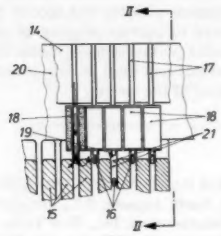
a first pair of connecting elements fixedly projecting axially from said first annular member and connected with the free ends of said first pair of parallel arm portions at positions related to the longitudinal extent of said first pair of parallel arm portions and the position of fixed connection of the fixed ends thereof with said annular portion so as to cause torque fixedly transmitted to said first annular member by the first shaft to be transmitted longitudinally through one of said first pair of arm portions to said annular portion under tension without longitudinal material displacement and through the other of said first pair of arm portions to said annular portion under compression without longitudinal material displacement while enabling through transverse material flexure of said first pair of arm portions the following relative motions of said annular portion with respect to said first annular member (1) a parallel linkage type substantially rectilinear movement in a first transverse direction generally perpendicular to the longitudinal extent of said first pair of parallel arm portions, (2) an angular movement about an axis extending generally in said first transverse direction, and (3) an axial movement, and

a second pair of connecting elements projecting axially from said second annular member and connected with the free ends of said second pair of parallel arm portions at positions related to the longitudinal extent of said second pair of parallel arm portions and the position of fixed connection of the fixed ends thereof with said annular portion so as to cause torque transmitted to said annular portion to be transmitted longitudinally through one of said second pair of arm portions to said second annular member under tension without longitudinal material displacement and through the other of said second pair of arm portions to said second annular member under compression without longitudinal material displacement while enabling through transverse material flexure of said second pair of arm portions the following relative motions of said annular portion with respect to said second annular member; (1) a parallel linkage type substantially rectilinear movement in a second transverse direction generally perpendicular to the longitudinal extent of said second pair of parallel arm portions and said first transverse direction, (2) an angular movement about an axis extending generally in said second transverse direction, and (3) an axial movement.

4,282,724
CONTROL MAGNET SYSTEM

Heinrich Elsässer, Stuttgart, Fed. Rep. of Germany, assignor to Sulzer Morat GmbH, Fed. Rep. of Germany

Filed Feb. 20, 1980, Ser. No. 122,866
Claims priority, application Fed. Rep. of Germany, Feb. 23, 1979, 2907008
Int. Cl.³ D04B *7/00, 15/66*
U.S. Cl. 66—75.2 **7 Claims**

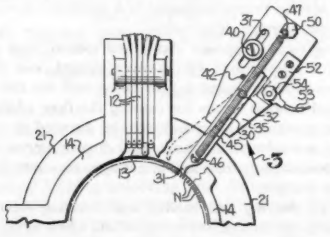


1. A control magnet system for a pattern apparatus on a textile machine, in particular a knitting machine, comprising at least one permanent magnet which includes at least one control pole having a pole surface and controllable by means of a control coil and at least one co-operating pole having a pole surface, and comprising at least one armature which is freely movable relative to the two poles and which can be applied against the pole surface of the control pole against a spring force in such a way that, when the control coil is not energised, the armature remains against the pole surface of the control pole by virtue of the magnetic force produced by the permanent magnet, whereas, when the control coil is energised, the armature is released from the pole surface of the control pole by virtue of the spring force, wherein the pole surface of the control pole is arranged substantially perpendicular to the direction of release of the armature, characterised in that the pole surface (**21**) of the co-operating pole (**15**) is arranged substantially perpendicular to the pole surface (**19**) of the control pole (**17** or **27**, **28**).

4,282,725
CIRCULAR KNITTING MACHINE WITH LATCH DETECTOR

Harper Shields, Burlington, and Roscoe M. Farrell, Pittsboro, both of N.C., assignors to Kayser-Roth Hosiery, Inc., Burlington, N.C.

Filed Apr. 25, 1980, Ser. No. 143,793
Int. Cl.³ D04B *35/10*
U.S. Cl. 66—157 **5 Claims**



1. In a circular knitting machine including a circle of needles mounted for rotation about a fixed axis, each of said needles including an upper hooked end and a pivoted latch movable between open and closed positions, and yarn feed fingers for feeding yarn to said needles as said needles are raised and lowered to form stitch loops, the combination therewith of latch detector means for detecting a latch improperly positioned in a closed position, said latch detector means comprising

(a) a trigger lever including a free end,

(b) means supporting said trigger lever for pivotal movement intermediate its ends and about an axis parallel to said fixed axis of said circle of needles, said free end being normally positioned in an operative latch detecting position immediately below the path of travel of said upper hooked ends of said needles so that a latch in the proper open position does not engage said free end of said trigger lever and while a latch in an improper closed position will engage and initially move said free end of said trigger lever to an inoperative position wherein said free end is moved in the direction of movement and outwardly away from the path of travel of said needles,

(c) stop means mounted on said supporting means and adapted to engage one side of said trigger lever for normally maintaining said free end of said trigger lever in said detecting position,

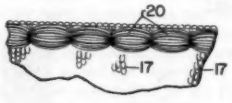
(d) resilient means mounted between said trigger lever and said supporting means for urging said trigger lever into engagement with said stop means with said trigger lever in said detecting position, and for immediately moving said free end of said trigger lever to said inoperative position outwardly and away from the path of travel of said needles upon being laterally deflected from said detecting position by a latch in an improper closed position, and

(e) sensor means operable by said trigger lever for signaling when said free end of said trigger lever is engaged by a closed latch and moved outwardly and away from the path of travel of said needles.

4,282,726
ANTI-SLIP FOOTLET SOCK

Donald L. Wilkins, Ringgold, Ga., assignor to Wayne Gossard, Inc., Nashville, Tenn.

Filed Oct. 31, 1979, Ser. No. 89,896
Int. Cl.³ D04B *9/46*
U.S. Cl. 66—172 E **8 Claims**

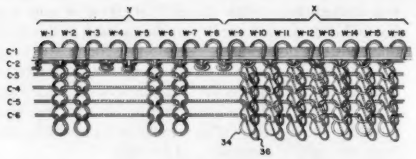


1. A knit footlet sock adapted to be worn inside of a low cut shoe comprising, a foot portion including a toe portion and a heel embracing portion, a foot receiving portion positioned above and closely adjacent said heel embracing portion and adapted to encircle the ankle area of a wearer, said foot receiving portion including a roll top having the inherent tendency to roll outwardly from the ankle area of the wearer, said roll top comprising a plurality of courses of elastic yarn inlaid in a predetermined number of wales of a body yarn forming an outer selvage of the foot receiving portion, and a number of courses of an ornamental yarn forming a bulky stitch comprising several courses commencing with a first course spaced from the outer selvage by a lesser number of courses of said bulky stitches, said stitch being knit on the outside of said foot receiving portion in spaced wales of said predetermined number and floated over the wales intermediate said spaced wales on the inside of said foot receiving portion.

4,282,727
DECORATIVE FOOTLET-TYPE SOCK

Albert R. Dunlap, Mt. Airy, and Dallas G. Nester, Burlington, both of N.C., assignors to Brown Wooten Mills, Inc., Burlington, N.C.

Filed Nov. 26, 1979, Ser. No. 97,134
Int. Cl.[3] D04B 9/46
U.S. Cl. 66—172 E **4 Claims**



1. A knit, low-cut, footlet-type sock adapted to be worn inside a low-cut shoe and substantially covered thereby with the exception of an exposed decorative welt, said welt comprising:

(a) a rear portion extending around substantially the rear half of said welt, said rear portion comprising a substantially freely and outwardly rolled construction which encircles the lower ankle area when emplaced on the wearer, said rolled construction including a plurality of courses knit with a combination body yarn and elastic yarn with the body yarn formed in terry loops and the elastic yarn forming the backing therefor; and

(b) a front portion extending around substantially the front half of said welt, the upper edge of said front portion being tacked down to the lower edge of said welt portion in a controlled, folded construction;

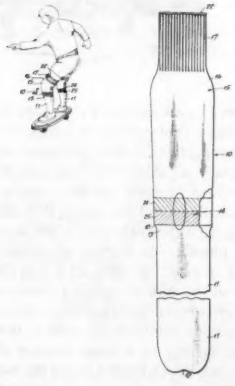
(c) said front portion of said welt comprises: bands separated by at least one of relatively narrow, low relief wale-wise band;

(d) said high and low relief bands being formed the inside of said welt portion of said sock, the welt portion being turned down and attached to the bottom of said selt along the upper edge of the front portion of said sock.

4,282,728
KNEE PROTECTIVE SOCK

Robert H. Tapp, Bronxville, N.Y., and Clarence W. Wall, Newton, N.C., assignors to Rudin & Roth, Inc., New York, N.Y.

Filed Mar. 23, 1978, Ser. No. 889,501
Int. Cl.[3] D04B 9/46
U.S. Cl. 66—182 **9 Claims**

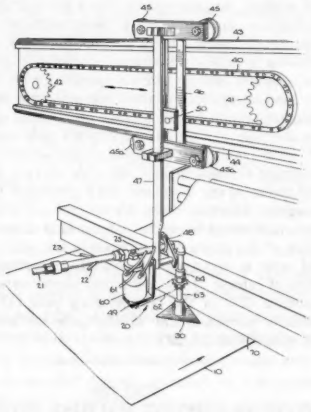


1. A knee protective sock comprising a one-piece knit construction comprising a first portion for the foot and calf, a second portion for below the knee, and a third portion for the knee, said portions being integrally knitted, and wherein said third portion is of thicker knit than said other portions, and further comprising an elastic webbing attached to the third portion and forming the top of the sock, and wherein said first portion comprises a cotton thread and a stretch thread knit, said second portion comprising a two stretch thread knit, and said third portion comprising a three thread knit comprising two threads of cotton and one stretch thread, whereby the top elastic in combination with the said second portion grips the leg of the wearer to prevent slipping of all portions, and wherein the second portion is more elastic than the first and third portions so that said third portion is retained in position to protect the knee of the wearer.

4,282,729
FOAM RANDOM DYEING SYSTEM

Larry G. Smith, North Augusta, S.C., assignor to United Merchants and Manufacturers, Inc., New York, N.Y.

Filed Sep. 28, 1979, Ser. No. 80,062
Int. Cl.[3] D06B 1/00
U.S. Cl. 68—205 R **18 Claims**



1. An apparatus for applying a foamed composition onto a substantially horizontal textile fabric to impart a generally random coloring effect to the fabric which comprises:

means for supplying a foam composition including a coloring agent therein;

conduit means through which said foam composition and coloring agent are routed, said conduit means having the exit portion thereof disposed in a generally downwardly directed vertical direction;

directing means disposed above and spaced from the substantially horizontal fabric being treated, said directing means being provided in association with the exit portion of said conduit means for causing the flow of the foam-color containing composition to be directed at least partially in a substantially horizontal direction prior to being fed downwardly from said directing means onto the fabric being treated;

means for moving said conduit and directing means transverse to the direction of travel of said fabric being treated; and

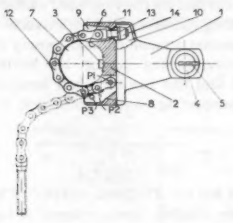
means for moving said directing means relative with respect to at least a portion of said conduit means independently of the foam supply means so as to cause the foam-color containing composition to impart a generally random coloring effect to the fabric.

4,282,730

ANTI-THEFT DEVICES FOR AUTOMOBILE VEHICLES

Paul Lipschutz, Croissy, France, assignor to Neiman S.A., Courbevoie, France

Filed Apr. 25, 1979, Ser. No. 33,294
Claims priority, application France, May 24, 1978, 78 15385
Int. Cl.[3] E05B *65/12;* F16B *2/08*
U.S. Cl. 70—184 4 Claims



1. A steering anti-theft device for an automobile vehicle, intended to be fitted on the steering column enclosing the steering shaft of the said vehicle, comprising

(a) a base portion formed with a groove having a semi-cylindrical surface to permit location of said base portion on the steering column,

(b) a body portion attachable to said base portion by means of screws with break-away heads,

(c) a locking bolt within said body portion movable between a locking position in which the bolt engages an aperture in the steering shaft and a withdrawn position in which the steering shaft is unlocked,

(d) a key-operated security lock within said body portion for effecting movement and locking of said locking bolt,

(e) a plurality of discrete locations provided in said base portion each location capable of selectively and fixedly mounting pins arranged parallel to and spaced from the axis of said semi-cylindrical surface at different distances,

(f) an elongated flexible element attached at one end to a selected one of said locations by a pin, and

(g) adjustable connecting means on said base portion for securing the other end of the flexible element to said base portion, whereby after said flexible element has been wrapped around the steering column and said one end attached to the base at the selected location by the pin, the other end of the flexible element is secured to the base portion by said connecting means which are adjusted to tighten the flexible element around said column, whereafter said body portion is attached to said base portion.

4,282,731

PIN-TUMBLER-TYPE LOCK HAVING ANTIPICK SECURITY ACTION

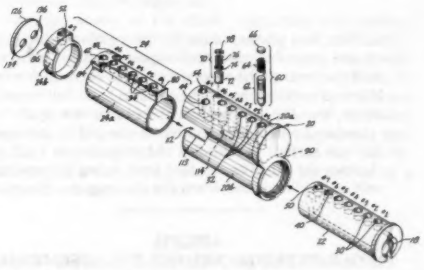
Joseph G. Taksony, 2600 NE. Athens Way #A7, Bremerton, Wash. 98310

Filed Jun. 4, 1979, Ser. No. 45,238
Int. Cl.[3] E05B *63/00*
U.S. Cl. 70—364 A 18 Claims

1. In a lock of the type having a casing and a core housing that houses a locking mechanism and that is releasably retained within the casing, and wherein the locking mechanism includes a cylindrical locking/unlocking plug defining a keyway and includes a core retaining control sleeve rotatably fitted on the plug and disposed therewith in the core housing, and a row of transversely oriented tumbler bores and associated primary/control tumbler assemblies so constructed and arranged in the core housing, sleeve and plug so that the tumbler assemblies have true primary and control breakpoints which respectively enable a primary key to rotate the plug relative to the control sleeve and core for unlocking the lock, and enable a control key to rotate the plug and control sleeve relative to the core housing for releasing the core housing from the casing, wherein the lock incorporates the improvement of an antipick jamming action that comprises:

said sleeve being transversely divided into first and second sleeve segments that are arranged for independent limited angular rotation relative to said core housing, said true primary/control breakpoints in said tumbler assemblies being disposed to that the primary key causes said plug to rotate relative to both said first and said second sleeve segments, and so that the control key causes said plug to rotate relative to said first segment and causes said second segment to rotate jointly with said plug relative to said core housing to release said core housing from said casing;

at least a first security tumbler bore formed in said core housing so as to intersect with said first sleeve segment, and a security tumbler bore formed in said first sleeve segment so as to extend between said core housing and plug, and a security tumbler bore formed in said plug so as



to extend from said first sleeve segment inwardly into said plug, said security bores in said plug and first sleeve segment being normally aligned with each other and circumferentially offset from said first security tumbler bore in said core housing and being movable into alignment with said first security tumbler bore in said core housing when said first sleeve segment and said plug are caused to rotate relative to said core housing due to picking of breakpoints on said primary/control tumbler assemblies; and

at least a first security tumbler means mounted in said first security tumbler bore of said core housing for causing said first sleeve segment and said plug to be jammed together so as to prevent relative rotation therebetween when said security tumbler bores in said plug and first sleeve segment become aligned with said first security tumbler bore in said core housing such that said plug cannot be rotated sufficiently relative to said core housing to open the lock because said plug is constrained to the limited angular rotation of said first sleeve segment.

4,282,732

DUST COVER FOR LOCK

Robert A. Bennett, 170 Sturbridge Rd., Easton, Conn. 06425

Filed Jan. 7, 1980, Ser. No. 110,186
Int. Cl.[3] E05B *17/18*
U.S. Cl. 70—455 5 Claims

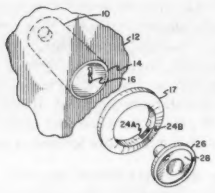
1. In combination with a lock cylinder having one end with a key receiving aperture therein, said cylinder being disposed within a frame, a dust cover comprising:

an annular member having a circular central opening centered on said one cylinder end, the diameter of said opening being slightly larger than the diameter of said cylinder, said member having front and rear surfaces, said member having a slot therein which extends from the rear surface of the member to a position intermediate the front and rear surfaces of the member, said slot communicating with said opening;

first means detachably securing the rear surface of said member to said frame;

a circular disc having front and rear surfaces and adapted to be moved into and out of sealing engagement with said opening, the front surface of the disc being adjacent the front surface of the member when the disc engages the opening;

second means pivotally interconnecting a portion of said



member to a portion of the periphery of said disc, one end of said second means being disposed in said slot to enable said one end of the second means to be rotatable in said slot and movable back and forth in said slot toward and away from the rear surface of said member; and

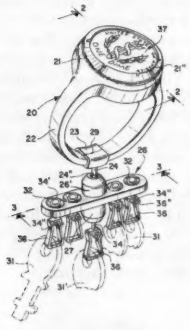
an elongated pivot lever secured at one end to the center of the rear surface of said disc and extending at right angles thereto, the other end of said lever being engagable with said one cylinder end when the disc engages the opening.

4,282,733

FINGER-RETAINED KEY HOLDER ASSEMBLAGE

Dorothy D. Schmitt (Johnston), 4138 Eagle Rock Blvd., Los Angeles, Calif. 90065

Filed Nov. 29, 1978, Ser. No. 964,788
Int. Cl.³ A47G *29/10*
U.S. Cl. 70—456 R **13 Claims**



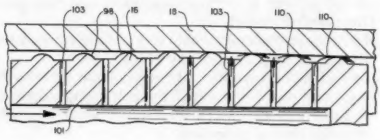
1. A finger-retained key-holder assemblage comprising finger-retaining means adapted to be fitted to the fingers of a hand to permit the assemblage to be dangled from and carried by the fingers without being gripped by the hand, a tranverse key support bar extending more than the width of one finger and adapted to be leveled and gripped therebelow by the fingers against the palm of the hand, said finger-retaining means including a member embracing the top of the fingers and flexible and swivel means for connecting the key support bar to the finger embracing member to hold the key support bar closed upon the undersurfaces of the fingers and foldable rearwardly into the palm of the hands outwardly thereof along the fingers, means for respectively loosely connecting the respective key supporting clips to the key support bar to normally dangle loosely therefrom, said key clips with the keys all being foldable into the palm of the hand or extendable along the undersurfaces of the fingers of the hand, the overall height of the assemblage with keys on the clips and when attached to the fingers being such that the keys may be easily reached and grasped by the thumb and forefinger of the same hand from which the assemblage is being carried by the fingers, said fingers embracing member being a ring adpated to be fitted to the third finger of the hand, said flexible and swivel means for connecting the transverse key support bar to the ring comprising a socket attachment connected to the bottom of the ring band, a link of about the height of the finger thickness having an upper ball head swivelly carried by the ring band socket attachment and loosely depending therefrom, said transverse key support bar having a ball socket attachment and loosely depending therefrom, said transverse key support bar having a ball socket formation and said line having a ball head on its lower end seated in the support bar socket formation to swivel relative thereto.

4,282,734

STRUCTURE OF TRUING PISTON CYLINDERS

George R. Eddy, Coulter, Iowa, assignor to Century Machine, Inc., Coulter, Iowa

Filed Feb. 5, 1979, Ser. No. 9,408
Int. Cl.³ B21D *22/10*
U.S. Cl. 72—54 **6 Claims**



1. A structure for truing piston cylinders, comprising:

(a) a mandrel support means including a piston cylinder support means mounted on a support base means, and a power supply means;

(b) a piston cylinder to be trued is mounted on said piston cylinder support means;

(c) a mandrel member is mounted in said piston cylinder support means, said mandrel member having portions thereof of a greater diameter than said piston cylinder;

(d) said mandrel member is forced through said piston cylinder by said power supply means to expand same to a desired trued diameter;

(e) said mandrel member includes a main body having a plurality of spaced sizing ring sections;

(f) said sizing ring sections of sections of progressively increasing diameters so as to progressively increase the diameter of said piston cylinder;

(g) said mandrel member having a leading end and a trailing end;

(h) a central fluid channel resembles a bore extends from said leading end toward said trailing end; and

(i) a plurality of fluid bleed holes, each extended between said central fluid channel and pairs of said sizing ring sections.

4,282,735

BRAKE FOR SHEET METAL OR THE LIKE

Douglas G. Break, Farmington Hills, Mich., assignor to Van Mark Products Corporation, Farmington Hills, Mich.

Continuation-in-part of Ser. No. 25,844, Apr. 2, 1979, abandoned. This application Aug. 21, 1979, Ser. No. 68,389
Int. Cl.³ B21D *5/04*
U.S. Cl. 72—319 **13 Claims**

1. A brake for workpiece of sheet metal or the like comprising:

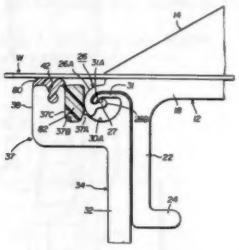
a base,

a jaw connected to said base having a linear edge about which the workpiece is to be bent,

means connected to the base for clamping a planar portion of the workpiece against said jaw leaving exposed a portion of the workpiece to be bent against said edge

a bearing connected to said base,

a crank for mounting on said bearing, the bearing affording a linear axis of rotation for said crank, the axis and the line of said edge lying in a common plane and on opposite sides of the plane of the planar portion when clamped, the crank comprising (a) a drive arm and (b) a head as a driven arm for exerting a bending force on the exposed portion of



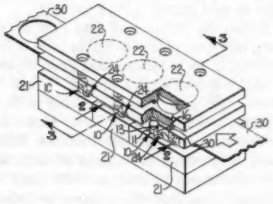
the workpiece against said edge when the drive arm is driven in one direction about said axis, said bearing receiving said crank and being engaged with said bearing by axial movement onto the bearing, and during engagement may be rotated on the bearing about the axis but cannot be radially disengaged, and said bearing comprising a member having an external cylindrical bearing surface of a first radius of curvature centered on said axis, said member having a second external cylindrical bearing surface of a second radius of curvature greater than said first radius and centered on said axis, and said bearing surfaces being diametrically remote with respect to each other relative to said axis.

4,282,736

STOCK LIFTER

Harry G. Mashburn, Asheville, N.C., assignor to Blue Ridge Industrial Technologies, Inc., Asheville, N.C.

Filed Mar. 13, 1980, Ser. No. 130,113
Int. Cl.³ B21D *45/00*
U.S. Cl. 72—345 **10 Claims**



1. A stock lifter for use in pairs and at opposite edge portions of strip stock material for supporting and guiding such stock material from one pair of relatively movable opposing die members to another pair and for moving such stock material out of engagement with die members during separation of the die members following successive die operations on such stock material, said stock lifter being characterized as being capable of being positioned in any desired orientation in a supporting die member thereby effectively serving to reduce the amount of material required for the formation of such supporting die member, said stock lifter comprising

an elongate body adapted to be slidably supported in one of the die members for longitudinal movement parallel with the relative movement of the die members,

resilient means cooperating with and acting upon said elongate body for biasing said body outwardly from the supporting die member in a direction towards an opposing die member,

said elongate body having a head defining an outer free end thereof with an annular groove extending around the entire circumference of said body adjacent to and below said head, and adapted for supporting and guiding the strip stock material during die operation,

shoulder means located on and alongside the medial portion of said elongate body and adapted for being engaged by a hold-down fastener located in the supporting die member to retain said stock lifter and limit its extent of outward travel from the supporting die member,

the medial portion of said elongate body being unobstructed from said shoulder means to adjacent said annular groove for avoiding interference with the inward sliding movement of the elongate body as when the die members are moved to closed position, and

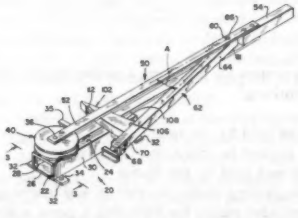
the annular nature of the stock supporting and guiding groove allowing said shoulder means and said unobstructed medial portion of said elongate body along with a hold-down fastener in the supporting die member to be oriented at any desired location around the circumference of the stock lifter instead of otherwise being positioned opposite that portion of the stock lifter supporting and guiding the strip stock material as heretofore, thereby allowing the supporting die member to be formed of a reduced width of material.

4,282,737

HAND OPERATED BENDING APPARATUS AND METHOD FOR METAL BAR, TUBING AND THE LIKE

Billy G. Maples, 65 Dale Rd., Middletown, N.J. 07748

Filed Mar. 24, 1980, Ser. No. 132,823
Int. Cl.³ B21D *7/03*
U.S. Cl. 72—388 **13 Claims**



1. Apparatus for a hand-operated bending of metal bars and/or tubing, said bending being automatically terminated when and as the bending reaches a preselected arc point, this apparatus including:

(a) a base member providing means for mounting said base member to a worktable, vise and the like;

(b) a forming die removably secured to and carried by the base member, said forming die having a theoretical center providing a bend radii means for a said metal bar, tubing and the like;

(c) a first guide means removably secured to said base member and providing aligning and retaining means for maintaining said metal bar, tubing and the like in a longitudinal axial position with the forming die preparatory to being bent;

(d) a sweep lever arm having one end pivotally secured to said forming die at an axis which is substantially at the center of a bend radii of and for the bar, tubing and the like being bent;

(e) a force link having one end pivotally carried and

mounted in the sweep lever arm, this pivoted end mounted intermediate the extent of said sweep lever arm, a distal end of said force link having a second guide means adapted to engage said bar, tubing or the like prior to the bending of said bar, tubing and the like, wherein the distal end of the force link is swung from an included angle of zero degrees or alignment with said sweep lever arm a selected amount, to form an included angle between the force link and the sweep lever arm, and at this time the second guide means engages the bar, tubing or the like along a longitudinal extent;

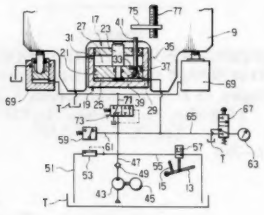
(f) means for grasping and rotating the sweep lever arm about the forming die, said rotation progressively reducing the included angle between the force link and the sweep lever arm, so that at the completion of the bend of the bar, tube and the like the distal end of the force link swings to and through an included angle of zero degree and alignment with the sweep lever arm.

4,282,738

METHOD AND APPARATUS FOR ADJUSTING STROKE LENGTH OF A RAM FOR PRESSES

Shigenori Kojima, Tokyo, and Katsumi Koyama, Hiratsuka, both of Japan, assignors to Amada Company, Limited, Kanagawa, Japan

Filed Apr. 2, 1979, Ser. No. 26,367
Claims priority, application Japan, Mar. 31, 1978, 53-37529
Int. Cl.³ B21D *5/02*
U.S. Cl. 72—389 **2 Claims**



1. An apparatus for adjusting a stroke length of a ram for a press, comprising:

a ram;

a first tool held by the ram;

a frame aligned in opposition to the ram;

a second tool held by the frame;

hydraulic driving means for raising and lowering the ram;

rotary encoder means for detecting a point where said first and second tools are completely engaged with each other at a predetermined hydraulic pressure in the driving means;

control means for setting said point as a base point from which a stroke length of the ram is thereafter measurable with respect to said second tool, for storing said point as the base point, and for transmitting signals;

whereby the stroke length of the ram is adjusted with respect to said base point;

stopper means for stopping the ram at a desired position, said stopper means being adjustably provided on the frame;

a hydraulically acting chamber, provided in the driving means, for raising the ram;

check valve means for communicating with the acting chamber; and

a push rod means for contacting the stopper means at one end and for pushing the check valve means at its other end;

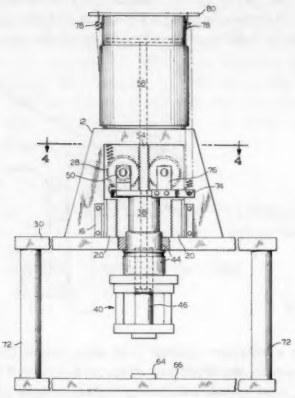
whereby the hydraulic pressure level in the acting chamber is adjusted.

4,282,739

GEARED POWER AMPLIFICATION UNIT FOR PRESSES

Norman P. Hallenbeck, Hebron, and Stephen F. Willard, Andover, both of Conn., assignors to N. P. Halenbeck Company, Vernon, Conn.

Filed Aug. 8, 1979, Ser. No. 64,891
Int. Cl.³ B21J *9/12*
U.S. Cl. 72—449 **12 Claims**



1. A stamping press with an augmented power stroke comprising:

a. a support having a guide portion;

b. a ram slidably seated in said guide portion of said support for movement between first and second positions, said ram having a head portion at one end thereof adapted for mounting tool means thereon, said head portion being spaced from a workpiece when said ram is in said first position thereof and being spaced adjacent the workpiece when said ram is in said second position thereof;

c. elongated movable rack means providing a rack surface thereon extending generally parallel to the axis of movement of said ram;

d. drive means operatively connected to said movable rack means for reciprocation of said movable rack means in the direction of movement of said ram;

e. elongated stationary rack means fixedly mounted on said support and providing a rack surface extending generally parallel to said movable rack surface;

f. gear means on the end of said ram opposite said head portion, said gear means meshing with said rack surface of said movable rack means, said gear means being spaced from said stationary rack surface in said first position of said ram, said gear means meshing with said stationary rack surface, when said movable rack means move to a predetermined engagement distance from said second position, to produce movement of said ram in the direction of movement of said movable rack means but at a speed lower than that of said movable rack means, thereby affording said movable rack means in a mechanical advantage while said ram is between said second position and the predetermined engagement distance from said second position; and

g. means for maintaining said ram substantially in a predetermined position relative to said movable rack means while said stationary rack surface is spaced from said gear means but permitting relative movement while said stationary rack surface meshes with said gear means, said ram thereby moving with substantially the same velocity as that of said movable rack means while said stationary rack surface is spaced from said gear means but moving with a velocity whose ratio to that of said movable rack means is

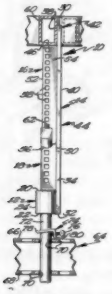
determined by said gear means when said stationary means meshes with said gear means.

4,282,740

HEIGHT EXTENDER FOR USE IN CONNECTION WITH AN APPARATUS FOR REPAIRING AND STRAIGHTENING

Gerald A. Specktor, 409 Cleveland Ave. South, St. Paul, Minn. 55105

Filed Aug. 3, 1979, Ser. No. 63,608
Int. Cl.[3] B21D *1/12, 1/14*
U.S. Cl. 72—461 18 Claims



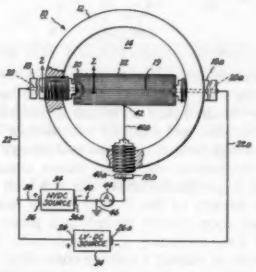
1. In an apparatus for repairing and straightening the body and frame of a high ground clearance wheeled vehicle including a tread member allowing the placement of the vehicle thereon, with the tread member including a plurality of apertures vertically passing therethrough, a bolster removably received in the tread apertures, and means for locking the bolster in the tread apertures, and with the bolster and tread member being adapted for receiving counterforces from the vehicle, the improvement comprising a removable, bolster height extender comprising, in combination: means for abutting with the vehicle; a sleeve member slidably mounted on the bolster for transferring counterforces to the bolster, with the sleeve member having an aperture of a size allowing receipt of the bolster; an elongated bar member connecting the abutting means with the sleeve member and vertically spacing the abutting means above the sleeve member, with the elongated bar member being spaced from the bolster when the bolster is received in the aperture of the sleeve member for preventing counterforces from being transferred directly from the elongated bar member to the bolster; first and second elongated brace members upstanding from and attached to the sleeve member and attached to the elongated bar member for insuring that the elongated bar member does not contact the bolster at all times when a counterforce is transferred from the vehicle to the bolster by the height extender, with the first and second elongated brace members including a series of positioning apertures passing therethrough; and a pin received in the positioning apertures of the first and second elongated brace members which abutts with and is supported on the bolster received in the sleeve member to allow the multilevel positioning of the height extender on the bolster, and with the sleeve member transferring all counterforces received by the height extender to the bolster adjacent to the tread member to avoid an undue amount of cantilever type counterforce into the tread member or the bolster.

4,282,741

DEVICE AND METHOD FOR DETECTING ALKALI METALS

Andrew S. Zarchy, Clifton Park, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Apr. 25, 1979, Ser. No. 33,257
Int. Cl.[3] G01N *27/00*
U.S. Cl. 73—23 2 Claims



1. A device for detecting the presence of one or more alkali metals present in trace amounts in a flowing gas, comprising:

(a) a conduit defining a cavity adapted to conduct a flow of said gas along a flow path extending through said cavity,

(b) a generally straight metalliferous filament having a work function of at least 3.3 ev disposed within said cavity and extending transversely through said flow path,

(c) means for heating said filament to a temperature sufficient to ionize a substantial portion of the alkali metals,

(d) an electrically conductive ion-collection member including a portion surrounding said filament in closely spaced coaxial relationship therewith to define an ionization-collection region of said cavity, said surrounding portion having a plurality of through-holes adapted to pass at least a portion of said flow therethrough,

(e) means electrically connected at one end thereof through a first lead to said filament and connected at the other end thereof through a second lead to said ion-collection member for developing a high-voltage electrical field within said region, said field having lines of force extending from said filament through said flow path to said surrounding portion of said member to effect contact of said ions with said collection member and neutralization of said ions thus contacted,

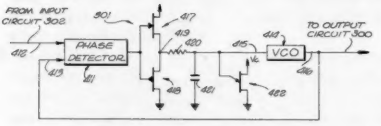
(f) means operably associated with said second lead for generating a signal in response to said neutralization and proportional to the rate of neutralization, and

(g) means for both (i) electrically insulating said ion-collection member from said first lead and (ii) reducing leakage current through said signal-generating means, said insulating-and-leakage reduction means including (A) a first electrically insulating high-resistance sleeve extending longitudinally of and peripherally about said first lead adjacent the end thereof adjoining said filament, (B) an electrically conductive low-resistance metallic sleeve extending longitudinally of and peripherally about said high-resistance sleeve, (C) a second electrically insulating high-resistance sleeve extending longitudinally of and peripherally about said metallic sleeve, and (D) means for electrically connecting said metallic sleeve to ground.

4,282,742
DENSITOMETER

Paul Z. Kalotay, Monrovia, and Iraj Ghahramani, Los Angeles, both of Calif., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Sep. 28, 1977, Ser. No. 837,454
Int. Cl.³ G01N *9/00*
U.S. Cl. 73—32 A **1 Claim**

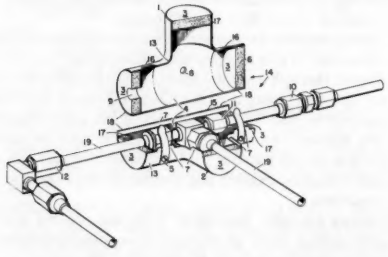


1. A vibration densitometer comprising: a probe including a vibratable member; electrical means actuable to impart vibration to said member; pick-up means to produce a first signal in synchronism with said member vibration; a loop circuit connected from said pick-up means to said electrical means to form an electromechanical oscillator; means connected from said loop circuit to produce a utility signal which is a known function of the density of the fluid in which said member is immersed, said loop circuit including a phase lock loop, said phase lock loop including a phase detector having first and second inputs, an output, a voltage controlled oscillator (VCO) having an input and an output, a resistor connected from said phase detector output to said VCO input, a capacitor connected from said VCO input to ground, a unijunction transistor having a gate connected from said VCO input, said VCO output being connected to said phase detector second input; an input circuit connected from said pick-up means to said phase detector first input; and an output circuit connected from said VCO output to said electrical means.

4,282,743
LEAK TEST FITTING

Patrick T. Pickett, Kettering, Ohio, assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Sep. 18, 1979, Ser. No. 76,527
Int. Cl.³ G01M *3/20*
U.S. Cl. 73—46 **3 Claims**

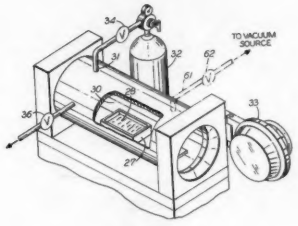


1. A device for use with a helium mass spectrometer leak detector wherein a joint in a conduit under test is enclosed by a volume, helium is placed in one of the volume or the conduit and the detector is connected to the other of the volume or the conduit to detect helium which passed through a leak in the joint, the joint being mounted against a flat surface, said device comprising: a housing member including a rigid wall forming a structure having a continuous edge and at least two ends, said edge being entirely within a plane, said housing member when held with said edge against the surface completely enclosing a conduit joint under test, the cross-sectional area of the interior of said housing member being relatively constant throughout the length thereof and larger than the exterior cross-sectional area of the conduit joint under test, thereby providing a volume around the conduit joint; a yieldable sealing element carried by said housing member at each end thereof, each of said elements generally filling the cross-sectional area at the end of the interior of said housing member to provide a yieldable barrier across each end of the hollow housing for sealing against a conduit; and an orifice through the wall of said member communicating with said volume for the passage of helium.

4,282,744
LEAK TESTING HERMETICALLY SEALED ELECTRONIC ARTICLES

Bernard M. Dick, Lee's Summit, Mo., assignor to Western Electric Co., Inc., New York, N.Y.

Filed Nov. 2, 1979, Ser. No. 90,799
Int. Cl.³ G01M *3/16*
U.S. Cl. 73—49.3 **11 Claims**



1. A method of leak testing a hermetically sealed electronic article, which comprises:

immersing the article into a fluid having an electrical conductivity capable of affecting a functional electrical characteristic of the article upon penetration of such fluid into an envelope of the article;

raising the pressure of the fluid to increase the tendency of the fluid to penetrate through crevices into the envelope; and

testing the functional electrical characteristics of the article across at least two terminals of the article, such test being indicative of the fluid having penetrated into the envelope.

4,282,745
PARTICLE SIZE DETERMINATION

Kenneth J. Burr, St. Austell, England, assignor to English Clays Lovering Pochin & Company Ltd., St. Austell, England

Filed Mar. 22, 1979, Ser. No. 22,944
Claims priority, application United Kingdom, Mar. 28, 1978, 12119/78
Int. Cl.³ G01N *15/04, 23/12*
U.S. Cl. 73—61.4 **18 Claims**

1. Apparatus for determining the proportion of particles having a size of less than a predetermined size in a fluid suspension, which apparatus comprises:

(a) at least one vessel for containing a fluid suspension;

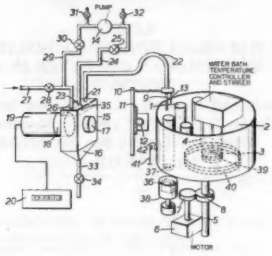
(b) mixing mean for thoroughly mixing the suspension in said vessel;

(c) a container connected to sampling means;

(d) transfer means for enabling said sampling means to selectively withdraw samples of the suspension from a predetermined level within said vessel and for transferring the samples to the container before and after settling for a preselected time in the vessel respectively, the relationship between said predetermined level and preselected time being such as to permit particles of said predetermined size to sink from the surface of the suspension to said predetermined level according to Stokes' law;

(e) monitoring means for monitoring the particle concentration within the container to produce an output dependent on said concentration; and

(f) control means for controlling the transfer means (i) so that the sampling means withdraws from said vessel a first sample of thoroughly mixed suspension from said predetermined level and the first sample is transferred to the container for monitoring and for draining and flushing the first sample after monitoring, and (ii) so that the sampling means withdraws from said vessel a second sample of suspension taken from the same predetermined level as



was the first sample for monitoring after allowing the suspension in said vessel to settle for said preselected time sufficient to enable particles of said predetermined size to sink from the surface of the suspension to said predetermined level within the vessel according to Stokes' law and the second sample is transferred to the container for monitoring; said control means being adapted to determine the proportion of particles having a size of less than said predetermined size in the fluid suspension using the outputs from said monitoring means resulting from monitoring of the first and second samples.

4,282,746

RATE-OF-USE FUEL CONSUMPTION INDICATOR FOR COMBUSTION ENGINES

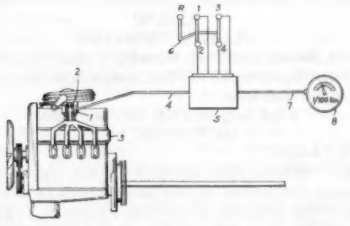
Ulrich Henke, Alsdorf, and Hans Baumgartner, Viersen, both of Fed. Rep. of Germany, assignors to Pierburg GmbH & Co. KG, Neuss, Fed. Rep. of Germany

Filed Nov. 7, 1979, Ser. No. 92,107

Claims priority, application Fed. Rep. of Germany, Nov. 18, 1978, 2850086

Int. Cl.³ G01F *9/02*

U.S. Cl. 73—114 **9 Claims**



1. An arrangement for indicating the on-going fuel consumption of an operating internal combustion engine in a motor vehicle having a multi-stage transmission, comprising: means for sensing an engine operating parameter indicative of the quantity of fuel being supplied to the engine per engine revolution; an indicating instrument; means for transmitting to said instrument a signal representative of the sensed parameter; and means for modulating the signal as a function of the currently engaged stage of the transmission; said engine being a Diesel engine having a variable-stroke fuel injection pump; said modulating means comprising a pressure transducer and said transmitting means comprising a passage connecting an output of said transducer to said instrument; and wherein said sensing means comprises vacuum-producing means connected with an input of said transducer and operative for producing a vacuum which varies as a function of the injection pump stroke.

4,282,747

SYSTEM FOR REGISTERING OPERATING PARAMETERS OF INTERNAL COMBUSTION ENGINES

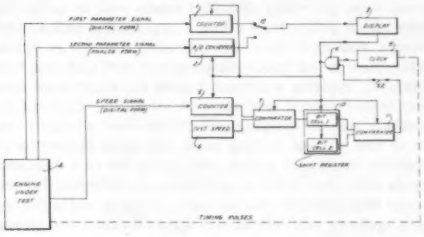
Otto Holzinger, Eschenbach, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Mar. 3, 1980, Ser. No. 126,827

Claims priority, application Fed. Rep. of Germany, May 21, 1979, 2920573

Int. Cl.³ G01M *15/00*

U.S. Cl. 73—116 **8 Claims**

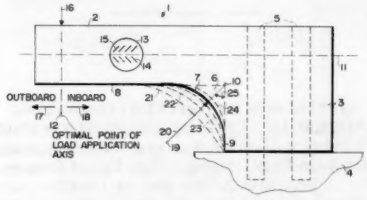


1. A system for registering operating parameters of an engine when a suitable engine test speed has been reached and when the engine is provided with at least one sensor which produces a parameter signal and is further provided with a sensor that produces a digital speed signal, comprising: at least one parameter signal input stage, each such parameter signal input stage being associated with and being responsive to a parameter signal so as to bring all parameter signal input stages and all parameter signals into one-to-one correspondance with each other, each parameter signal input stage operating in a manner that it registers its corresponding input signal upon receipt of a clock pulse and retains such registration until updated by a subsequent clock pulse; a speed monitor responsive to the speed signal, the speed monitor operating in a manner that it registers the speed signal upon receipt of a clock pulse and retains such registration until updated by a subsequent clock pulse; a user-adjustable test speed control, the test speed control operating in a manner that the test speed control can be adjusted by a user to register a test speed at which engine parameters are to be measured; a comparator connected to the speed monitor and the test speed control, the comparator producing a logically high output signal when a speed registered by the speed monitor at least equals the test speed registered by the test speed control and producing a logically low output signal otherwise; a clock producing a train of clock pulses; and a switch connected to the clock, the comparator, all parameter signal input stages and the speed monitor, the switch permitting clock pulses produced by the clock to be received by all parameter signal input stages and the speed monitor when the comparator produces a logically low output signal and preventing clock pulses produced by the clock from being received by all parameter signal input stages and the speed monitor otherwise.

4,282,748
MECHANICAL MOMENT SENSITIVITY COMPENSATION IN SHEAR BEAM TRANSDUCERS

Harry E. Lockery, Sudbury, and Eric Laimins, Belmont, both of Mass., assignors to Hottinger Baldwin Measurements, Inc., Framingham, Mass.

Filed Jun. 27, 1979, Ser. No. 52,613
Int. Cl.³ G01L *1/04*
U.S. Cl. 73—862.66 **11 Claims**

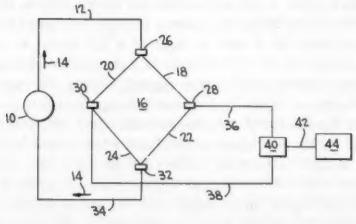


1. A method for mechanically compensating the moment sensitivity of a shear beam transducer having a free end load application section, a mounting section and fillet means located substantially where said sections merge, comprising the following steps: providing said fillet means with an initial fillet radius which differs from a final compensating radius, establishing a load application axis extending through an optimal loading point in said load application section of said shear beam transducer, applying a defined load to the shear beam transducer in said optimal loading point, measuring the respective transducer output, applying said defined load off-center relative to said optimal loading point and again measuring the respective transducer output, comparing the two transducer outputs with each other to ascertain any difference between the two measurements, mechanically changing said initial fillet radius, applying said defined load again off-center and measuring the resulting output, comparing the outputs again to see whether the respective difference has been reduced relative to said first mentioned difference, and continuing the foregoing steps including the mechanical changing of the fillet radius until said difference is substantially zero, whereby the shear beam transducer is made substantially insensitive to off-center load applications, and whereby all shear beam transducers of the same type may be provided with the same compensating fillet radius once the foregoing steps have been performed for one shear beam transducer of that type.

4,282,749
STRAIN MEASURING SYSTEM

John D. Russell, 26878 Sea Vista Dr., Malibu, Calif. 90265

Filed Jan. 28, 1980, Ser. No. 116,145
Int. Cl.³ G01L *5/00*
U.S. Cl. 73—862.58 **6 Claims**



1. A system for measuring strain in a body subjected to stress comprising:

a plurality of strain-deformable members adapted for attachment to said body and arranged in a fluid bridge configuration having a pair of fluid input junctions and a pair of fluid output junctions;

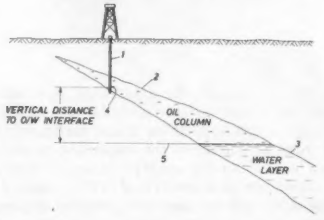
a source of fluid pressure connected across said fluid input junctions for supplying a fluid stream at a constant rate and pressure through said members in said fluid bridge; and

a pressure sensitive transducer connected across said fluid output junctions, whereby a change in fluid flow rate and pressure in said members effected by deformations produced by strains in the body will be detected by said transducer.

4,282,750
PROCESS FOR MEASURING THE FORMATION WATER PRESSURE WITHIN AN OIL LAYER IN A DIPPING RESERVOIR

Michael Prats, and Alexander S. Williamson, both of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Apr. 4, 1980, Ser. No. 137,342
Int. Cl.³ E21B *49/00*
U.S. Cl. 73—155 **7 Claims**



1. A process for directly measuring a pressure substantially equalling the formation water pressure in an oil-productive portion of a subterranean reservoir comprising:

displacing a limited volume of water into a continuous water-phase which (a) extends through a material which has an oil entry pressure which is high enough to effectively prevent oil entry while maintaining a permeability to water and thus to function as a selectively water-permeable capillary diaphragm and (b) extends into the oil-productive reservoir;

allowing the pressure within said water-phase to be reduced by the imbibition of water into the reservoir; and,

subsequently measuring the pressure within said water-phase.

4,282,751
FLUID FLOWMETER

James M. Brown, Allen Park; Hermann Kaiser, Utica, and Jerry A. Olson, Dearborn, all of Mich., assignors to Eaton Corporation, Cleveland, Ohio

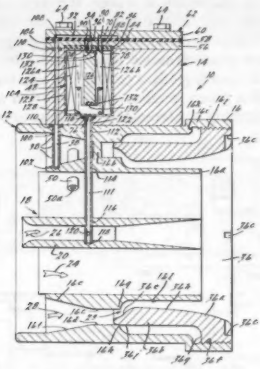
Filed Aug. 29, 1979, Ser. No. 70,593
Int. Cl.³ G01F *5/00*
U.S. Cl. 73—202 **19 Claims**

1. An improved fluid flowmeter of the type including a passageway for the flow of fluid therethrough and a fluid flow sensing means operative to generate a signal as a function of said fluid flow over a range of operation, said improvement comprising:

a bypass passage disposed substantially concentrically with said passageway and operative to interconnect a point within said passageway upstream of said fluid flow sensing means with a second point within said passageway downstream of said means; and

flow restricting means composed of nominally radially opposed inner and outer contoured protrusions disposed within said bypass passage and coacting to define a throat therein, and protrustions being preselectably axially dis-

placeable with respect to one another to establish a characteristic discharge coefficient within said bypass passage



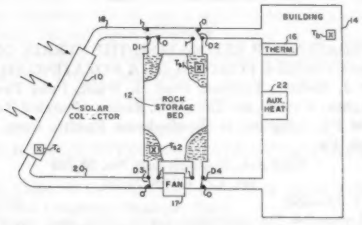
which continuously increases with increasing fluid flow over the entire range of operation.

4,282,752

MULTI-CHANNEL TEMPERATURE MEASUREMENT AMPLIFICATION SYSTEM

James R. Currie, Huntsville, Ala., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Nov. 29, 1979, Ser. No. 98,569
Int. Cl.³ G01K *3/08*
U.S. Cl. 73—341 **6 Claims**



1. A multi-channel temperature measurement amplification system comprising:

first, second, and third multiplexers having a plurality of sequentially operated, coordinately switched, channels, each channel having an input and output, the outputs of said first and second multiplexers being commonly connected together, and the inputs of the channels of said third multiplexer being connected together;

a reference and common input being connected to one input of a first of said coordinately switched channels of said first and second multiplexers;

at least one temperature measurement signal means for providing an input to an input of one, other than said first, channel of said first multiplexer;

amplification means comprising at least one amplifier stage and responsive to the sequential outputs of said channels of said first multiplexer for providing an output to inputs of said channels of said third multiplexer;

at least one reference temperature signal means for providing an input to one, other than said first, channel of said second multiplexer; and

signal correction means comprising:

a differential amplifier having its negative input coupled to the output of said first channel of said third multiplexer, its positive input connected to the output of the channels of said second multiplexer, and its output connected to the input of a stage of amplification of said amplification means, and

a capacitor being coupled between said first input and output of said differential amplifier, and the polarity of signal coupling of said differential amplifier being such that a negative feedback is effected from the output to input of said amplification means;

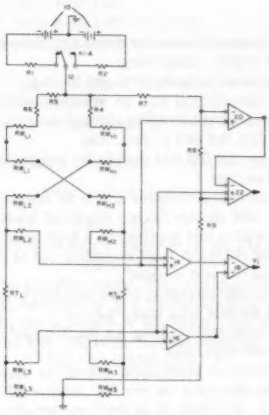
whereby at least one temperature measurement signal applied to an input of one of said channels of said first multiplexer is compared with a reference temperature signal, and a significant output is provided from one of the outputs of said third multiplexer when a temperature measurement signal exceeds a signal from said reference temperature signal means appearing in the same channel.

4,282,753

COMBINATION ABSOLUTE AND DIFFERENTIAL TEMPERATURE SYSTEM

William A. Davidson, Evanston, Ill., assignor to The United States of America as represented by the Secretary of Transportation, Washington, D.C.

Filed Mar. 31, 1980, Ser. No. 135,370
Int. Cl.³ G01K *7/18*
U.S. Cl. 73—342 **10 Claims**



1. Apparatus for measuring a temperature differential between two spacially displaced points comprising:

first temperature sensor means, said first sensor means including a temperature responsive resistance element;

second temperature sensor means, said second sensor means including a temperature responsive resistance element;

means for connecting said sensor means resistance elements in adjacent legs of a bridge circuit, said bridge circuit having an excitation terminal;

a source of excitation current for said bridge circuit, said current source having a pair of opposite polarity terminals;

means for alternately connecting said bridge circuit excitation terminal to said opposite polarity current source terminals;

first differential amplifier means connected to first ends of each of said sensor means resistance elements, said first amplifier means providing a signal commensurate with the voltage difference at the said first end of said resistance elements;

second differential amplifier means connected to second ends of each of said sensor means resistance elements, said

second amplifier means providing a signal commensurate with the voltage difference at the said second ends of said resistance elements; and

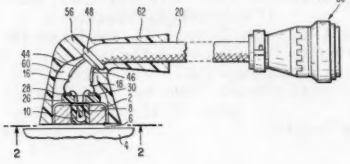
means connected to said first and second amplifier means and responsive to said signal commensurate with voltage difference for providing an output signal indicative of the difference in the temperatures to which said sensor means are exposed.

4,282,754

TEMPERATURE SENSOR FOR MEASURING THE TEMPERATURE OF AN ENGINE

Robert Provasnik, Holland, Pa., assignor to Siemens Corporation, Iselin, N.J.

Filed Nov. 15, 1979, Ser. No. 94,438
Int. Cl.[3] G01K *1/14, 7/16*
U.S. Cl. 73—346 **6 Claims**



1. A temperature sensor for measuring the temperature of an automobile engine, comprising:

(a) a magnet of cylindrical shape having

(a1) a longitudinal axis, an aperture being formed along said axis and extending through said magnet,

(a2) a first flat end surface, and

(a3) a second flat end surface for magnetic attachment to said engine;

(b) an electric heat sensitive device for temperature measurements, said device having electrical leads and being retained within said aperture by a heat-conductive material, and said electrical leads extending out of said aperture at said first flat end surface;

(c) an electrical insulating board attached to said first surface of said magnet, said board having

(c1) a clearance opening for leading said electrical leads therethrough, and

(c2) electrical connection points on elongated contact means mounted on the free surface of said insulating board, said leads from said heat sensitive device being electrically connected respectively to said points;

(d) a lead-out cable having lead-out leads, said lead-out leads being spacedly electrically connected via said contact means respectively to said connection points; and

(e) a thermal insulating housing of an elastic and electrical insulating material, said housing enclosing said board and said connecting points and circumferentially encompassing and holding said magnet, thereby leaving open said second surface of said magnet, and said housing comprises an outlet portion for leading said lead-out cable out of said housing approximately parallel to said second surface of said magnet.

4,282,755

TRANSDUCER DRIVE AND CONTROL

Bayard G. Gardineer, Skillman, and George W. Leber, Delran, both of N.J., assignors to Technicare Corporation, Solon, Ohio

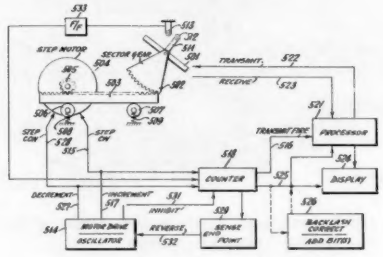
Filed Dec. 5, 1979, Ser. No. 100,598
Int. Cl.[3] G01N *29/04*
U.S. Cl. 73—634 **8 Claims**

1. In an ultrasound imaging system, scan and display control apparatus comprising:

a. ultrasound transducer means adapted physically to oscillate about a predetermined axis;

b. transducer positioning means for oscillating said transducer, an increment at a time, through a given arc about said axis, said positioning means including a stepping motor system and control means for energizing said motor system at predetermined time increments;

c. means for sensing select passages of said transducer means through a given, predetermined portion of said arc, and for generating a reference signal pulse at each said sensed passage;



d. counting means, responsive to said means for energizing and reset by each said reference signal pulse, for maintaining a representation of cumulative increments travelled by said transducer means from said predetermined position; and

e. means, responsive to said counting means, for conditioning said positioning means to reverse the direction of oscillation of said transducer means about said axis when said counting means achieves select predetermined counts.

4,282,756

APPARATUS FOR ESTIMATING THE STRAIN ON AN INACCESSIBLE PORTION OF A ROTATING SHAFT

Albert J. Molnar, Trafford; Fred H. Wolff, Penn Township, Allegheny County, and Donald G. Ramey, Churchill Borough, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 10, 1979, Ser. No. 56,368
Int. Cl.[3] G01N *29/00*
U.S. Cl. 73—650 **22 Claims**

1. Apparatus for indirectly determining in a mechanical system the relative difference in instantaneous angular displacement $(\theta_{m+1}-\theta_m)$ between two rotating masses on a common resilient shaft to which is applied a driving torque (T_{app}) and on which two other masses are accessible for direct monitoring, comprising:

(a) first monitoring means disposed to monitor the first of said other masses for providing a first monitoring means output signal which is related to the instantaneous displacement θ_1 of said first other mass relative to a fixed reference;

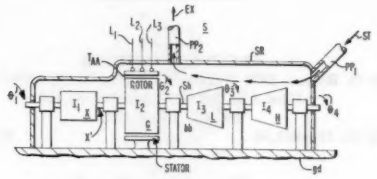
(b) second monitoring means disposed to monitor the second of said other masses for providing a second monitoring means output signal which is related to the instantaneous angular displacement θ_n of said second other mass relative to said fixed reference;

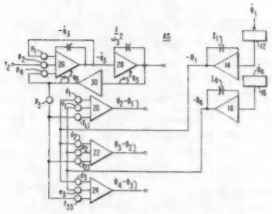
(c) torque detecting means disposed to detect said torque for providing a torque means output signal which is related to said torque (T_{app}) at any instant of time;

(d) solution means interconnected with said torque means and utilizing said torque means output signal as an input for generating the instantaneous value of a modal coordinate (q_a) as a modal coordinate output signal in accordance with the continuous solution of the following differential equation:

$$q_a + K\,q_a + K_1 q_a = K_2 T_{app}$$

where K, K_1 and K_2 are constants determined by the physical properties of said mechanical system and the normal mode transform; and





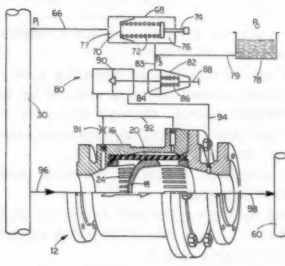
(e) summing means interconnected with said first monitoring means, said second monitoring means and said solution means for summing said first monitoring means output signal, said second monitoring means output signal and said modal coordinate output signal to produce a summing means output signal which is related to the quantity $(\theta_{m+1}-\theta_m)$ even though the values θ_{m+1} and θ_m have not been directly measured.

4,282,757

DEVICE FOR DETECTING RATE OF CHANGE IN PRESSURE

Alan R. Cohn, El Cerrito, Calif., assignor to Grove Valve and Regulator Company, Oakland, Calif.

Filed Oct. 1, 1979, Ser. No. 80,988
Int. Cl.³ G01L *7/08*; G05D *11/00*
U.S. Cl. 73—714 **5 Claims**



1. Apparatus for detecting a rate of pressure increase higher than an acceptable level comprising:

a monitor conduit to be connected at one end thereof to a pipeline to be protected;

a monitor chamber with a uniform cross section connected at one end thereof to the other end of said monitor conduit;

a pressure-responsive, movable member across said chamber;

a spring biasing said movable member toward said one end of said chamber; and

means for producing a signal when rate of pressure increase in said pipeline exceeds a predetermined level;

said last-named means comprising:

an orifice in said monitor conduit; and

a pilot valve with a valve member operated by a pressure-responsive member for comparing the pressures at said one and said other ends of said monitor conduit, operable to produce said signal when pressure at said one end exceeds pressure at said other end by a predetermined amount;

first duct means connecting said other end of the monitor conduit to one side of said pressure-responsive member to bias said valve member toward closed position;

adjustable force-applying means acting against said one side of the pressure-resonsive member; and

second duct means connecting said one end of the monitor conduit to the other side of said pressure-responsive member;

said apparatus further including:

a flow diverting line to be connected to said pipeline to deliver fluid to a reservoir;

a surge relief valve in said diverting line to open when pressure in said diverting line overcomes pressure in a control jacket;

said jacket being normally at a pressure to maintain said relief valve closed; and

an evacuation line connecting said jacket to a zone of low pressure;

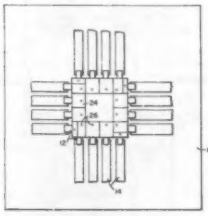
said pilot valve being connected in said evacuation line.

4,282,758

INDIVIDUAL LEAD PULL TEST FOR BEAM LEADED DEVICES

Richard M. Wootten, Huntsville, Ala., and Jake Herron, Jr., Niceville, Fla., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 20, 1979, Ser. No. 105,839
Int. Cl.³ G01N *3/08*
U.S. Cl. 73—827 **3 Claims**

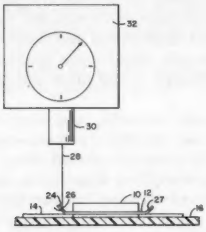


1. A method for testing individual beam-leads of a chip-beam leaded device that has a multiplicity of beam-leads bonded to respective conductors that are mounted on a substrate, said method comprising cutting said chip beam-leaded device into sections so that a beam-lead remains on each section, then cutting a hole through each cut section at a position adjacent to said beam-lead, placing a hook of a gram pull tester through said hole in said cut section and pulling said gram pull tester until said beam-lead breaks or is separated from said conductor to determine the bond strength of said beam-lead relative to said conductor.

4,282,759
METHOD AND APPARATUS FOR NON-DESTRUCTIVE TESTING OF BEAM-LEAD INTEGRATED CIRCUIT CONNECTIONS

Jimmy D. Merrell, Madison, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 26, 1979, Ser. No. 106,983
Int. Cl.[3] G01N *3/08*
U.S. Cl. 73—827 2 Claims

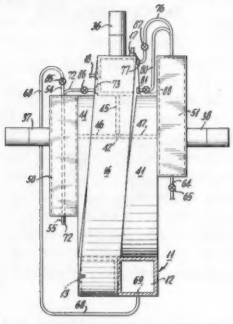


1. A method for testing individual beam-leads of a chip beam-leaded device that has a multiplicity of beam-leads bonded to respective conductors that are mounted on a substrate and with each of said beam-leads having a pull tab with a weakened area, said method comprising connecting a pull hook of a pull tester to said pull tab by inserting said hook through an opening in said pull tab and then exerting a predetermined pull force from said pull tester to said pull tab until said pull tab is broken at said weakened area to determine that the individual beam-lead is sufficiently bonded to its respective conductor.

4,282,760
MULTIPHASE FLUID FLOW METER (D#76,244)

Robert W. Pitts, Jr.; Dan M. Arnold, and Hans J. Paap, all of Houston, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Jan. 23, 1980, Ser. No. 114,482
Int. Cl.[3] G01F *1/88*
U.S. Cl. 73—861.02 8 Claims



1. Improved multiphase fluid flow meter wherein one of said phases is a gas, comprising

a conduit for said fluid to flow therethrough,

said conduit including a full circle loop for subjecting said fluid to centrifugal force,

first means for measuring the pressure differential between the center and outside radii on said loop,

second means for measuring the pressure differential between the inside and center radii on said loop,

means for measuring the average density taken radially across the fluid flowing through said loop,

means for measuring the density of said gas phase, and

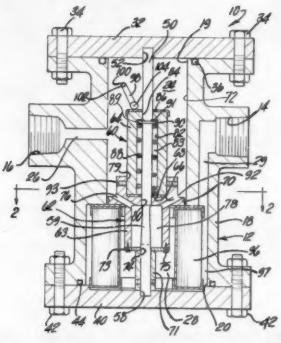
means for measuring the density of said liquid phase,

all whereby rates of fluid flow including said gas flowing through said meter may be measured.

4,282,761
FLUID FLOW METER

Nils O. Rosaen, 5490 Waldon, Clarkston, Mich. 48016

Filed Aug. 20, 1979, Ser. No. 67,444
Int. Cl.[3] G01F *1/22*
U.S. Cl. 73—861.58 14 Claims



1. A fluid flow meter comprising:

a housing having a fluid inlet and a fluid outlet radially disposed in said housing;

fluid passage means formed through said housing for connecting said inlet with said outlet, said passage means including an elongated chamber and means connecting one end to the inlet and its other end to the outlet;

a piston assembly axially slidably mounted in said housing chamber and movable between a first and a second position;

means for fluidly sealing said piston assembly to said housing;

said piston assembly further comprising an orifice plate having a fluid port open to the inlet end of said chamber, said orifice plate being removable from said piston assembly, and means formed through said piston assembly for fluidly connecting said port to the outlet end of said chamber;

means for resiliently urging said piston assembly toward the inlet end of the chamber;

a rod held in said housing and extending axially through at least a portion of said chamber, said rod having a tapered portion which extends through said port and variably restricts said port in dependence upon the axial position of said piston assembly;

means for exteriorly indicating the axial position of the piston assembly; and

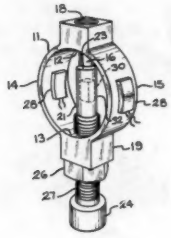
said housing having a removable end cover on an axial end of the chamber on the side of the piston assembly opposite the resilient urging means,

said orifice plate being removable from said piston assembly and removable from said housing without disturbing or replacing said piston assembly or said rod when said end cover is removed from said housing whereby said orifice plate can be replaced with another orifice plate having a different size port to thereby change the flow range of the flow meter.

4,282,762
LOAD SENSING TRANSDUCER

Richard L. Zenker, Grosse Pointe Woods, Mich., assignor to Kelsey-Hayes Company, Romulus, Mich.

Filed Oct. 29, 1979, Ser. No. 88,879
Int. Cl.³ G01L 1/22
U.S. Cl. 73—862.52 5 Claims

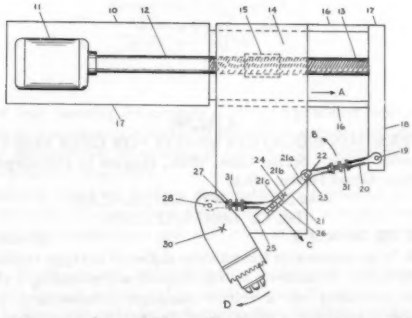


1. A dual range load measuring transducer comprising an annular member having two diametrically opposed end regions and two diametrically opposed side regions spaced between said end regions, means for applying a load between said end regions, such load elastically deforming said side regions, first strain gauge means for measuring any force between said end regions deforming said side regions, an anvil, an adjustable spindle, means mounting said anvil on said spindle within said annular member in alignment with said diametrically opposed end regions and spaced apart to define a gap, said gap having a preselected adjustable spacing which closes when an applied load between said end regions exceeds a predetermined load whereby such predetermined load is the maximum load deforming said regions and any additional load above such predetermined load is transmitted between said anvil and said spindle, and second strain gauge means located on one of said spindle and said anvil for measuring any load transmitted between said anvil and said spindle.

4,282,763
COMPOUND OSCILLATOR

Elmer L. Griebeler, Cleveland Heights, Ohio, assignor to C-R-O, Inc., Menomonee Falls, Wis.

Filed May 15, 1979, Ser. No. 39,200
Int. Cl.³ F16H 27/02, 21/44
U.S. Cl. 74—89.15 14 Claims

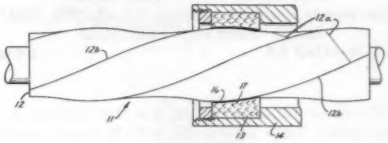


1. Apparatus for variable oscillatory movement comprising a central member having a first end and a second end, a first link pivotally affixed at one end thereof to said central member at a first-link attachment intermediate said first end and said second end, said first link being pivotally mounted at a fixed location at an end opposite said end affixed to said central member, a second link pivotally affixed at one end thereof by an adjustable resultant member to said central member intermediate said first-link attachment and said second end, said central member being pivotally attached to a carrier by a fulcrum, said fulcrum being intermediate said first-link attachment and said second end, said carrier being rectilinearly movable relative to said fixed location.

4,282,764
ROTARY TO LINEAR ACTUATOR AND METHOD OF MAKING THE SAME

Bernard Harris, Bayside, Wis., assignor to Rexnord Inc., Milwaukee, Wis.

Filed Sep. 17, 1979, Ser. No. 75,930
Int. Cl.³ F16H 1/18; B65H 81/00
U.S. Cl. 74—89.15 9 Claims

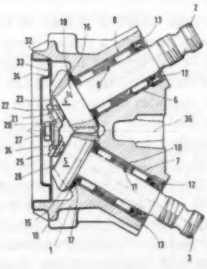


1. A rotary-to-linear actuator which includes a rigid shaft and a low friction material lined filament reinforced resin collar, the shaft having a helical groove, the collar having a corresponding spiral ridge, said helical groove being of the form generated by a straight line of fixed angularity respecting a plane normal to the helix axis, the fixed angle referred to being between 30 and 45 degrees, the reinforcing of the collar comprising successive layers of parallel filaments helically wound over and around the low friction material, the first layers which form the inner layers of the collar being wound at an angle not greater than said fixed angle such that the filaments lie across the projecting face of the spiral ridge and do not span the groove whereby the low friction material is directly supported against the outer dimensions of the shaft.

4,282,765
ANGLE GEAR FOR VEHICLE STEERING MECHANISM

Karl Ashauer, and Fritz Blumenstein, both of Wolfsburg, Fed. Rep. of Germany, assignors to Volkswagenwerk Aktiengesellschaft, Fed. Rep. of Germany

Filed Jul. 5, 1979, Ser. No. 54,892
Claims priority, application Fed. Rep. of Germany, Jul. 7, 1978, 2829895
Int. Cl.³ F16H 1/14
U.S. Cl. 74—417 8 Claims



1. An angle gear for a vehicle steering mechanism with two meshing bevel gears rigidly mounted on shafts which can be axially displaced in a housing and whose axes form an angle relative to each other, characterized in that on the housing there is maintained a support arrangement with bearing sur-

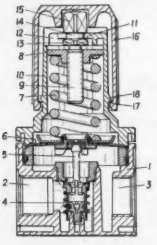
faces directed essentially perpendicular to the end faces of the bevel gears and bearing against said end faces of said gears for support of them against axial forces.

4,282,766

ADJUSTING MECHANISM FOR REGULATING DEVICES

Rudolf Huber, Vienna, Austria, assignor to Hoerbiger Ventilwerke Aktiengesellschaft, Vienna, Austria

Filed Jul. 25, 1979, Ser. No. 60,727
Claims priority, application Austria, Jul. 25, 1978, 5413/78
Int. Cl.³ F16H *1/20*; F16K *31/12*
U.S. Cl. 74—424.8 VA **6 Claims**



1. An adjusting mechanism for a regulating device, said mechanism including

an elongated housing which has an end wall including a key slot therethrough that is shaped to have a larger portion and a smaller portion, the smaller portion being positioned so as to be in alignment with the axis of said housing,

a spring collar which is slidingly mounted in said housing to be movable towards and away from said end wall, said spring collar having a threaded hole therethrough which is in alignment with the axis of said housing,

a regulating spring mounted in said housing, one end of said regulating spring abutting said spring collar and the opposite end being in contact with a movable part of said regulating device, movement of said spring collar away from said end wall causing said regulating spring to be compressed against said movable part of said regulating device,

an adjusting spindle which is shaped to have an elongated threaded lower portion, a collar portion and an upper portion, said collar portion having larger radial dimensions than the smaller portion of said key slot whereas said upper portion includes at least a section which has smaller radial dimensions than said smaller portion of said key slot, said elongated threaded lower portion and said collar portion of said spindle being movable through the larger portion of said key slot in said end wall and repositionable such that said threaded lower portion will threadingly engage the axial threaded hole in said spring collar and such that said section of said upper portion of said spindle will fit within said smaller portion of said key slot, the collar portion of said spindle preventing said spindle from thereafter being removed through said smaller portion of said key slot,

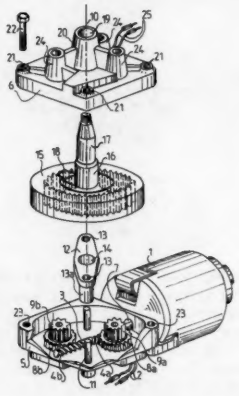
rotation of said spindle moving said spring collar along said housing and thus adjusting the pressure of said regulating spring against said movable part of said regulating device.

4,282,767

REDUCTION GEAR

Roland R. Guichard, Chaource, France, assignor to Societe pour l'Equipement de Vehicules, Issy-les-Moulineaux, France

Filed Jul. 2, 1979, Ser. No. 53,812
Int. Cl.³ F16H *1/20*
U.S. Cl. 74—427 **13 Claims**



1. A reduction gear unit comprising a housing which is adapted to be fixed to a motor; a drive output shaft rotatable about an axis; gear transmission members in said housing and connected to said drive output shaft; and means on said housing defining a journal bearing for said drive output shaft, said housing being externally substantially symmetrical in relation to said drive output shaft, wherein said housing comprises: (a) a casing having an open side, and a closed side which is perpendicular to the axis of rotation of said drive output shaft; (b) a cover closing said open side; (c) means on said cover for securing the reduction gear unit on a support; wherein said cover is secured on the casing at n points which are regularly interspaced around said axis of the drive output shaft at the same distance from said axis; and wherein said cover carries p securing means regularly distributed around said axis of the drive output shaft at the same distance from the said axis, p being an integer which is different from n.

4,282,768

VIBRATION ISOLATION MOUNT FOR GEAR SHIFTER

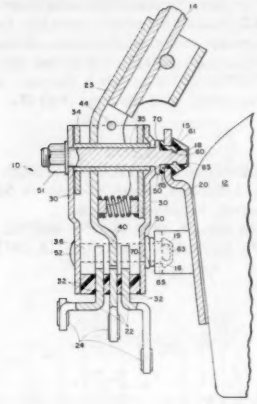
Charles Osborn, Spring Lake, Mich., assignor to JSJ Corporation, Grand Haven, Mich.

Filed May 25, 1979, Ser. No. 42,220
Int. Cl.³ G05G *9/12, 25/00*
U.S. Cl. 74—473 R **21 Claims**

1. In an automotive transmission shifter of the type mounted directly on an automotive transmission and including a shift stick extending into a vehicle passenger compartment, said shifter comprising a plurality of displaceable gear actuators and a plurality of spacer plates sandwiched between a pair of side plates, said side plates being bolted together by at least one bolt, the improvement comprising sound and vibration isolation means disposed between the transmission and said shifter comprising:

a plurality of sound and vibration isolating grommets for

providing a widely spaced three-point connection between the transmission and said shifter; and



at least one post for mounting one of said grommets disposed on the end of said at least one bolt.

4,282,769

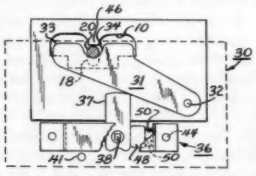
TRANSMISSION SHIFTER NEUTRAL LOCK

Don G. Sandrock, McHenry, Ill., assignor to Fiat-Allis Construction Machinery, Inc., Deerfield, Ill.

Filed Dec. 7, 1979, Ser. No. 101,111

Int. Cl.³ G05G *5/06*

U.S. Cl. 74—475 **8 Claims**



1. A lock assembly for securely retaining a gear shift lever of a vehicle transmission in a neutral position to prevent accidental or unintentional movement of the gear shift lever into a drive position comprising

manually operable locking means having a locking arm pivotably mounted for selective movement to engage and retain a transmission gear shift lever in a neutral position, and

said locking means further including a lock actuating member having a first end portion adapted to contact said locking arm and a second end portion pivotally mounted to a support sutructure for selective manual movement between a first position spaced from said locking arm to a second position in contact with said locking arm for effecting said selective movement of said locking arm to engage and retain a transmission gear shift lever in a neutral position.

4,282,770

STEERING GEAR AND METHOD OF ASSEMBLING SUCH GEAR

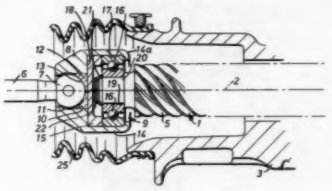
Frederick J. Adams, Clevedon, England, assignor to Cam Gears Limited, Hertfordshire, England

Filed Nov. 19, 1979, Ser. No. 95,456

Claims priority, application United Kingdom, Dec. 7, 1978, 47569/78

Int. Cl.³ B62D *1/20;* **F16H** *27/02*

U.S. Cl. 74—498 **14 Claims**



12. A variable ratio steering apparatus for use in effecting turning movement of a steerable vehicle wheel, said apparatus comprising a longitudinally extending rack gear movable along its longitudinal axis, control means for effecting rotational movement of said rack gear about its longitudinal axis simultaneously with movement of said rack gear along its longitudinal axis to vary the rate of movement of said rack gear along its longitudinal axis and the rate of turning movement of the steerable vehicle wheel, a pivotal output member connected with the steerable vehicle wheel, a housing, universal joint means disposed within said housing for enabling said output member to pivot in a plurality of directions relative to said rack gear, and bearing means disposed within said housing adjacent to said universal joint means for connecting said rack gear with said housing and for enabling said rack gear to rotate relative to said housing and said universal joint means about the longitudinal central axis of said rack gear, said bearing means being disposed between said housing and said one end portion of said rack gear to transmit thrust forces from said rack gear to said housing while enabling said rack gear to rotate relative to said housing.

4,282,771

RAILROAD HAND BRAKE WITH SPRING CLUTCH

William L. Grube, Lake Bluff, Ill., assignor to MacLean-Fogg Company, Mundelein, Ill.

Filed Nov. 9, 1977, Ser. No. 849,777

Int. Cl.³ G05G *1/08;* **F16D** *67/02*

U.S. Cl. 74—505 **27 Claims**

1. A load take up device of the type incorporating a spring clutch, and comprising in combination:

a housing;

an output drum having a cylindrical surface;

coupling means for interconnecting the output drum with the load;

a control drum having a cylindrical surface adjacent to and aligned with said output drum;

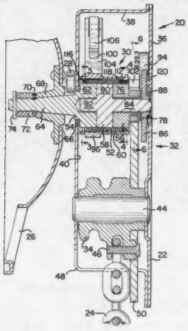
said output and control drums being mounted for rotation relative to said housing about a common axis;

rotation controlling means connected between the housing and the control drum and permitting rotation of the control drum in only one rotational direction;

a coil spring telescoped with said output and control drums, said spring being radially deformable in a first direction to engage said output and control drums and being radially deformable in a second direction to release said output and control drums;

an input element engageable with said spring at a region adjacent said control drum and remote from said output drum and movable in opposed rotational directions selec-

tively to radially deform said spring in said first direction to interlock said input element and said control and output drums for rotation thereof in said one rotational direction for load take up, and to radially deform said spring in said second direction to release said output drum from said control drum to permit gradual movement of said output drum in the opposite rotational direction for gradual release of the load; and



a quick release element engageable with said spring at a region said output drum and remote from said control drum, said quick release element being movable to radially deform said spring in said second direction abruptly to uncouple said output drum from said control drum for unrestricted release of the load.

4,282,772

ROTATIONAL SPEED AND TORQUE MECHANICAL TRANSDUCER

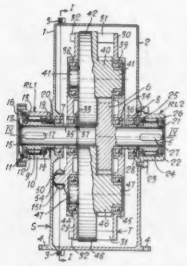
Gino Franch, 54, Via S.Vigilio, Bolzano, Italy

Filed Jun. 29, 1979, Ser. No. 53,435

Claims priority, application Italy, Jul. 14, 1978, 4846 A/78; Oct. 30, 1978, 4869 A/78; Feb. 23, 1979, 4810 A/79

Int. Cl.[3] **F16H** *29/02, 37/12*

U.S. Cl. 74—679 **25 Claims**



1. A rotational speed and torque mechanical transducer, comprising:

(a) a epicyclic gearing presenting a sun gear (**6**) secured on a main shaft (**5**), at least one planet gear (**40, 46**) and a planet carrier (T) for carrying the said planet gears, rotatably mounted around the axis of the said main shaft (**5**);

(b) an active mass (**42, 48**) connected with each planet gear (**40, 46**), whose alternating torques produced by the inertia forces are transmitted to the main shaft (**5**), and whose barycenter lies on the axis of rotation of the respective planet gear;

(c) coupling means to couple the driving shaft (**60, 460, 600**) to the said planet carrier (T) for driving the said carrier (T) into swinging rotational movement around its rotational axis (**5**);

(d) at least a pair of freewheel couplings (**RL1,RL2, RL3,1RL1,1RL2,1RL3**) which provide their locking action in opposite rotational directions, limiting the angular speed of the main shaft (**5**), and at least one output shaft (**77,177,277,377,477,577**) coupled, through at least one freewheel coupling, with the main shaft (**5**).

4,282,773

CHANGE-SPEED TRANSMISSION

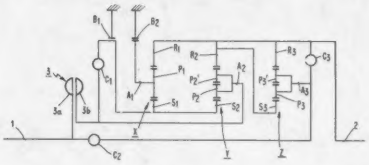
Kunio Ohtsuka, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Apr. 25, 1978, Ser. No. 899,992

Claims priority, application Japan, May 13, 1977, 52/54207

Int. Cl.[3] **F16H** *47/08*

U.S. Cl. 74—688 **16 Claims**



1. A change-speed transmission comprising:

an input member (**1**) to receive the input torque;

an output member (**2**) to provide the output torque;

a hydrokinetic unit (**3**) having a pump (*3a*) connected to said input member for simultaneous rotation therewith and a turbine (*3b*);

a first and a second and a third clutch (C_1, C_2, C_3);

a planetary gear unit (X, Y, Z) having at least a first, a second and a third rotary element;

said first rotary element of said gear unit being connected to said turbine (*3b*) through said first clutch for simultaneous rotation therewith when said clutch is engaged;

said third rotary element of said gear unit being connected to said output member for simultaneous rotation therewith;

said input member (**1**) being connected to said second rotary element through said second clutch (C_2) for simultaneous rotation therewith when said clutch is engaged;

said input member being directly connectable through said second and third clutches (C_2, C_3) to said output member (**2**) for simultaneous rotation therewith so as to bypass said hydrokinetic unit when said clutches are simultaneously engaged;

whereby the output torque of the transmission may be selectively provided totally through said hydrokinetic unit (**3**), may be split partially through said hydrokinetic unit (**3**) and partially through at least one of said second and third clutches thereby providing at least a portion of the output torque to the output member (**2**) bypassing said hydrokinetic unit (**3**) and may be totally provided bypassing said hydrokinetic unit (**3**) by actuation of both said second and third clutches for increased efficiency.

4,282,774

TORQUE CONVERTER

Cornelis van der Lely, 7, Brüschenrain, Zug, Switzerland

Filed Oct. 11, 1979, Ser. No. 83,637

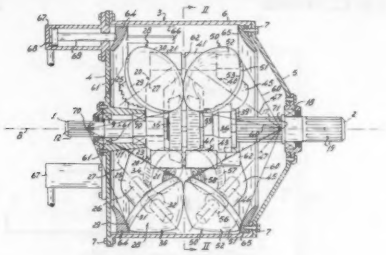
Claims priority, application Netherlands, Oct. 13, 1978, 7810296; Oct. 13, 1978, 7810297

Int. Cl.[3] **F16H** *15/50, 37/02*

U.S. Cl. 74—690 **29 Claims**

29. A torque converter comprising a housing, an input shaft and an output shaft that are drivenly interconnected through respective friction elements within said housing, the two shafts being rotatable about a common main axis and each shaft being

geared to at least one respective friction element that is mounted for rotation about a corresponding rotary shaft, said rotary shaft being inclined to said main axis and the elements of said input and said output having friction surfaces that engage one another, respective annular control members being positioned adjacent the elements of said input and output shafts,



said elements being displaceable outwardly from said main axis by centrifugal force to roll on one another and on said control members during rotation about their corresponding rotary shafts, each rotary shaft being held by an arm pivoted to a support and said support being freely rotatable about said main axis, said input and output shafts being geared to their respective elements by respective planetary gear systems.

4,282,775

TRANSMISSION HAVING A TWO-SPEED PLANETARY GEAR SET

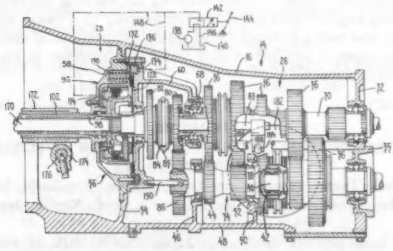
Jean-Claude Van Dest, Ris-Orangis, France, assignor to Massey-Ferguson Inc., Detroit, Mich.

Filed May 18, 1979, Ser. No. 40,379

Claims priority, application United Kingdom, May 30, 1978, 23948/78

Int. Cl.[3] **F16H** *37/00, 3/08*

U.S. Cl. 74—740 **5 Claims**



1. In a transmission (**14**) having

a first change gear mechanism (**26**) including first and second parallel shafts (**30**, **34**) carrying a plurality of intermeshing gear sets (**36**) and an input gear (**86**); and

a housing (**16**) for the first change gear mechanism (**26**);

the improvement comprising a support (**60**) removably supported within the housing (**16**), a second change gear mechanism (**28**) carried by said support (**60**), the second change gear mechanism (**28**) including a rotatable third shaft (**78**), a forward/reverse gear mechanism including a pair of gears (**80**, **82**) rotatably journaled about the third shaft (**78**) and capable of selectively interconnecting the rotatable third shaft (**78**) with the input gear (**86**) to drive the same, and a two-speed planetary gear set (**96**) in driving relationship with the third shaft (**78**).

4,282,776

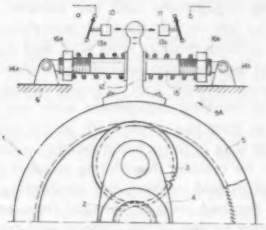
OVERLOAD PROTECTION FOR TRANSMISSION SYSTEM WITH PLANETARY-GEAR TRAIN

Fritz D. Eller, Heliweg 36, 43 Essen 14, Fed. Rep. of Germany

Filed Mar. 29, 1979, Ser. No. 25,181

Int. Cl.[3] **F16H** *1/28, 5/52*

U.S. Cl. 74—801 **12 Claims**



1. In a transmission system comprising an input shaft driven by a power source, an output shaft coupled with a load, and a planetary-gear train including a sun gear connected with one of said shafts, a planet carrier connected with the other of said shafts and a ring gear disposed in a stationary housing,

the combination therewith of:

yieldable retaining means tending to hold said ring gear in a predetermined position relative to said housing;

control means entrained by said ring gear;

first and second position-sensing means secured to said housing and juxtaposed with said control means for detecting a relative rotation of said ring gear beyond respective limits on opposite sides of said predetermined position; and

first and second overload-signaling means respectively controlled by said first and second position-sensing means for indicating the sense of deviation of said ring gear from said predetermined position.

4,282,777

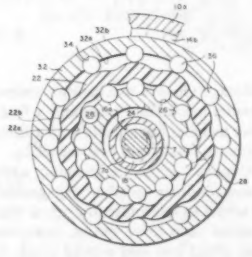
PANCAKE PLANETARY DRIVE

Henry Ryffel, Nashua, N.H., and Thomas J. Black, Jr., Lowell, Mass., assignors to Compudrive Corporation, North Billerica, Mass.

Filed Jan. 2, 1979, Ser. No. 555

Int. Cl.[3] **F16H** *1/28;* **F04C** *18/113*

U.S. Cl. 74—804 **14 Claims**



1. An improved two stage planetary differential drive comprising:

A. a housing,

B. an inner nonorbiting member in the housing,

C. an outer nonorbiting member in the housing, one of said nonorbiting members being rotatively fixed to the housing, the other nonorbiting member being rotatively movable in the housing,

D. a shaft connected to the other nonorbiting member and projecting from said housing,

E. an annular orbiting member positioned in the housing radially between the inner and outer nonorbiting members, said orbiting member having an inner wall and an outer wall surrounding the inner wall, said inner nonorbiting member and the inner wall of said orbiting member being formed with opposing surfaces constituting teeth in meshing engagement with one another, there being at least one less tooth in the inner nonorbiting member than in the orbiting member inner wall, said outer nonorbiting member and the outer wall of said annular orbiting member being formed with opposing surfaces constituting teeth in meshing engagement with one another, there being at least one more tooth in the outer nonorbiting member than in the orbiting member outer wall, and

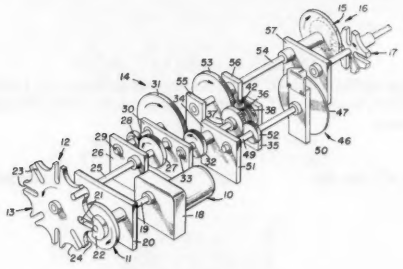
F. means for orbiting the orbiting member about said shaft axis, all of said orbiting and nonorbiting member teeth being disposed radially outward from and in the same transverse section of the drive as said orbiting means so that when said orbiting member is orbited, the forces exerted on said orbiting means are all in said section.

4,282,778

MULTI-STAGE GENEVA MECHANISM

An T. Yang, and Lih M. Hsia, both of Davis, Calif., assignors to The Regents of the University of California, Davis, Calif.

Filed Jul. 16, 1979, Ser. No. 58,085
Int. Cl.³ B23Q *17/00*; F16H *27/06*
U.S. Cl. 74—820 **9 Claims**



1. A multi-stage Geneva mechanism comprising

a first Geneva mechanism including a first crank having a first drive member engageable with a slotted first wheel to intermittently rotate said first wheel,

a second Geneva mechanism including a second crank having a second drive member engageable with a slotted second wheel to intermittently rotate said second wheel,

constant speed ratio drive means, interconnected between said first wheel and said second crank, for rotating said second crank one revolution in response to partial rotation of said first wheel, and

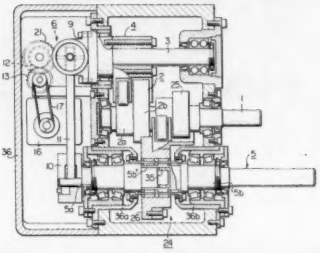
means for selectively adjusting the phase angle between said second crank and said second wheel, said phase angle being defined as the included angle between a first line intersecting the axes of rotation of said second crank and said second wheel and a second line intersecting the axis of rotation of said second crank and the drive member thereof.

4,282,779

INDEXING DRIVE APPARATUS

Heizaburo Kato, Tokyo, Japan, assignor to Sankyo Manufacturing Company, Ltd., Tokyo, Japan

Filed Oct. 24, 1979, Ser. No. 87,836
Claims priority, application Japan, Oct. 26, 1978, 53/131942; Mar. 9, 1979, 54/27386
Int. Cl.³ B23Q *17/00*
U.S. Cl. 74—822 **10 Claims**



1. An indexing drive apparatus comprising a composite cam assembly connected to a drive source to be rotated, a turret assembly adapted to follow rotation of said composite cam assembly thereby to be swung, a turret shaft having said turret assembly fixedly mounted thereon and adapted to be rotated in an oscillatory manner in correspondence to the swinging movement of said turret assembly, an output shaft extending substantially in parallel with said turret shaft, and an interlocking unit for operatively connecting said turret shaft and said output shaft to each other, said interlocking unit including a first swing member fixedly secured to said turret shaft at one end thereof, a movable member mounted on said first swing member to be swung together with said first swing member and adapted to be movable relative to said first swing member in the axial direction thereof, a second swing member fixedly secured to said output shaft at one end thereof, a connecting member for linking the other end of said second swing member to said movable member, and adjusting means operatively connected to said movable member for varying the ratio of a swing angle of said second swing member to a swing angle of said first swing member by adjusting the position of said movable member relative to said first swing member in the axial direction thereof.

4,282,780

ELECTRIC CONTROL APPARATUS FOR AUTOMATIC TRANSMISSIONS

Shinzo Totani, Nagoya, and Takaaki Kato, Toyohashi, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Jun. 4, 1979, Ser. No. 44,933
Claims priority, application Japan, Jun. 6, 1978, 53/68076
Int. Cl.³ B60K *41/06, 41/10*
U.S. Cl. 74—866 **7 Claims**

1. An electric control apparatus for an automatic transmission of an automotive vehicle, said transmission including electrically operated shift means for conducting one of upshift and downshift operations of said transmission upon energization thereof and conducting the other shift operation of said transmission upon deenergization thereof, said electric control apparatus comprising:

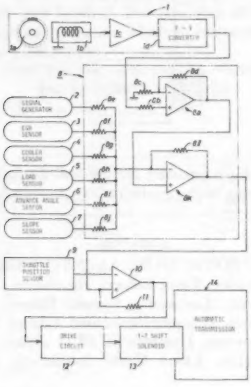
first means for producing a first electric signal indicative of the actual vehicle speed;

second means for producing a second electric signal indicative of the actual throttle opening angle of a prime engine of the vehicle;

third means for producing a third electric signal indicative of various loads given to said prime engine;

control means responsive to said first and third electric

signals for calculating a first value θ of the throttle opening angle based on a shift pattern defined by a linear function $\theta = KS - l$, in which K is a constant, S is a value of said first electric signal, and l is a value of said third electric signal, said control means displacing an intercept of said shift pattern in relation to a change of the value of said third electric signal and being responsive to said second electric signal to compare said first value with a second



value represented by said second electric signal for producing a first control signal when said first value is smaller than said second value and for producing a second control signal when said first value is larger than said second value; and

drive means for energizing said shift means in response to said first control signal and for deenergizing said shift means in response to said second control signal.

4,282,781

TRANSMISSION THROTTLE VALVE OF AUTOMATIC POWER TRANSMISSION

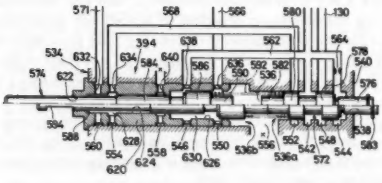
Kazuyoshi Iwanaga, Yokohama; Kazuhiko Sugano, Tokyo, and Kunio Ohtsuka, Yokohama, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Jan. 18, 1979, Ser. No. 4,519

Claims priority, application Japan, Sep. 5, 1978, 53-108038

Int. Cl.³ B60K *41/06, 41/00;* **G05D** *16/00*

U.S. Cl. 74—869 **8 Claims**



1. In an automotive transmission for a vehicle having an engine, the combination of

a throttle valve comprising:

a bore;

a first valve element slidably received in said bore to define first and second fluid chambers, said first valve element being movable between a first and a second axial position;

a second valve element slidably received in said bore to define a third fluid chamber, said second valve element being movable between a first and a second axial position;

biasing means for biasing said first and second valve elements away from each other and toward their respective first axial positions, said biasing means ceasing to bias said first and second valve elements upon said first and second valve elements separating by a predetermined distance;

means defining a line pressure inlet port which fully fluidly communicates with said second chamber when said first valve element is in the first axial position thereof and which fully communicates with said first chamber when said first vavle element assumes said second axial position thereof;

means defining a throttle discharge port which fully communicates with said second chamber when said first valve element is in the first axial position thereof and which is closed when said first valve element assumes said second axial position;

means defining a first feedback port which constantly fluidly communicates with first chamber and said throttle pressure discharge port;

means defining a first drain port which partially communicates with said second chamber when said first valve element assumes said first axial position and which fully fluidly communicates with said second chamber when in the second axial position thereof;

means defining a second feedback port which is in constant fluid communication with said throttle pressure discharge port and which fully fluidly communicates with said third chamber when said second valve element is in the second axial position thereof and which is closed when said second valve element assumes said first axial position;

means defining a second drain port which is closed when said second valve element is in said second axial position and which fully communicates with said third chamber when said second valve element assumes said first axial position thereof;

an accelerator pedal; and

a mechanical linkage operatively interconnecting said accelerator pedal and said second valve element for moving said second valve element toward said second axial position thereof in response to the depression of said accelerator pedal; whereby, upon loss of said connection between said second valve element and said accelerator pedal said first and second valve elements move to their respective first and second axial positions and full line pressure is discharged through said throttle pressure discharge port.

4,282,782

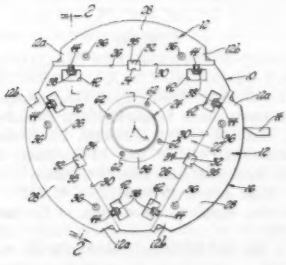
METHOD OF MAKING ROTARY DIE RACKS

Harald N. Jungesjö, Rochester, Mich., assignor to Anderson-Cook, Inc., Fraser, Mich.

Filed Jul. 10, 1979, Ser. No. 56,161

Int. Cl.³ B21K *5/20*

U.S. Cl. 76—107 R **6 Claims**



1. A method for making a pair of rotary die racks each of which has an elongated shape including a partially circular forming face of less than 180° and a flat mounting surface that faces in the opposite direction as the forming face, the method comprising: casting a pair of metal blanks of the die racks;

securing the pair of cast blanks of the die racks to a rotatable spindle in a side-by-side relationship with the mounting surfaces thereof engaged with the spindle; turning the forming faces of both blanks by rotating the spindle while cutting the blanks to form the partially circular shape of the forming face of each blank at the proper location relative to the mounting surface thereof and in a uniform relationship with respect to the other blank; and subsequently cutting forming projections in the turned face of each die rack.

4,282,783

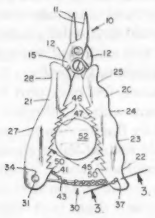
HANDLES FOR PLIERS

William S. Fortune, 29866 Cuthbert St., Malibu, Calif. 90265

Filed Feb. 11, 1980, Ser. No. 120,403

Int. Cl.[3] B25B *7/02*

U.S. Cl. 81—428 R **8 Claims**



1. Handles for metal pliers comprising:

(a) a first handle having an outer portion which when put over one of the handles of the pliers has smooth consecutive identations to fit the four fingers of the operator;

(b) a second handle having a smooth outwardly curved outer portion to fit the palm and an indentation close to the jaws of the pliers to fit the thumb of the operator, both of said handles consisting of a moldable, plastic material having electrical insulating properties and having a central opening therethrough shaped to fit over the plier handles;

(c) the insides of each of said handles facing each other when inserted over the plier handles having serrated portions to retain components and the like, thereby to act as holding fixture;

(d) a safety strap;

(e) retaining means on one end of said strap;

(f) a hole in one end of one of said handles for passing therethrough said safety strap and retaining means;

(g) a hole in the other one of said handles for passing therethrough the free end of said strap; and

(h) means for retaining the loose end of said strap, said means being disposed near the fixed end of said strap.

4,282,784

METHOD AND LATHE FOR MACHINING OUT-OF-ROUND CIRCUMFERENCES

Otto Feller, Leichlingen; Heinz Oepen, Hückeswagen; Manfred Kühl, Leverkusen; Alois Skrobek; Horst Bornefeld, both of Burscheid; Hans G. Seiler, Odenthal, and Walter Johann, Wermelskirchen, all of Fed. Rep. of Germany, assignors to Goetze AG, Burscheid, Fed. Rep. of Germany

Filed Jun. 5, 1979, Ser. No. 45,733

Claims priority, application Fed. Rep. of Germany, Jun. 5, 1978, 2824624

Int. Cl.[3] B23B *3/28, 3/00, 19/02*

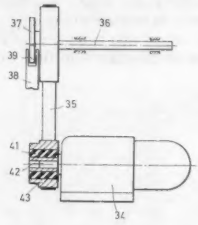
U.S. Cl. 82—19 **4 Claims**

1. A lathe for circumferentially machining an out-of-round workpiece comprising

a supporting structure,

a spindle rotatably mounted on said supporting structure, said spindle receiving at least one workpiece, and

a variable speed drive for rotating said workpiece at an irregular angular speed, said drive comprising a motor and energy storage means interposed between said motor and



said spindle for partially storing and discharging kinetic energy during each revolution of said spindle.

4,282,785

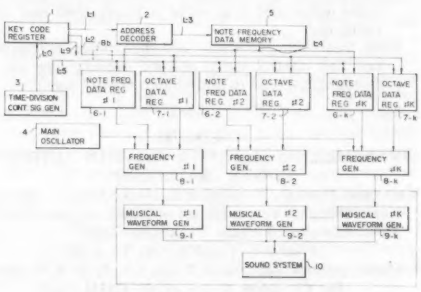
ELECTRONIC MUSICAL INSTRUMENT

Nobuharu Obayashi, Kami; Hikaru Hashizume, Hamamatsu; Seiji Kameyama, Hamamatsu; Sadaaki Ezawa, Hamamatsu; Tatsunori Kondo, Hamamatsu; Kiyomi Takauji, Hamamatsu, and Tohru Aoyama, Hamamatsu, all of Japan, assignors to Kabushiki Kaisha Kawai Gakki Seisakusho, Hamamatsu, Japan

Filed Oct. 17, 1977, Ser. No. 842,525

Int. Cl.[3] G10H *1/00;* **G10F** *1/00;* **G10H** *1/04*

U.S. Cl. 84—1.01 **3 Claims**



1. An electronic musical instrument comprising key switches, a key code register coupled to said key switches for providing coded data in response to key switch depression, a note frequency data memory for storing note frequency data corresponding to the coded data from the key code register;

a time division control signal generator for generating a time division pulse;

a note frequency data register for latching and storing the data from the note frequency data memory by the time division pulse whereby the note frequency data memory is used on a time-shared basis;

an octave data register for latching and storing octave data from the key code register by the time division pulse from the time division control signal generator;

a frequency generator composed of a programmable counter supplied with the output from the note frequency data register to provide a generator frequency corresponding thereto, a frequency divider array having a plurality of output ends and supplied with said generator frequency, and a decoder supplied with the output from the octave data register, the outputs from the respective output ends of the frequency divider array being selected by the output from the decoder in accordance with the octave data, to produce a frequency generator output, and

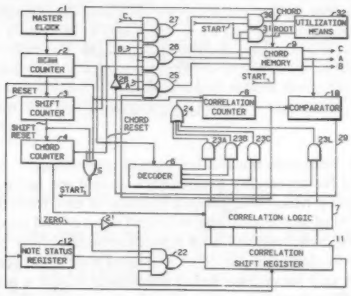
a musical waveform generator composed of filter circuits corresponding to respective musical instrument sounds and supplied with the output from the frequency generator to provide a musical signal.

4,282,786

AUTOMATIC CHORD TYPE AND ROOT NOTE DETECTOR

Ralph Deutsch, and Leslie J. Deutsch, both of Sherman Oaks, Calif., assignors to Kawai Musical Instruments Mfg. Co., Ltd., Hamamatsu, Japan

Filed Sep. 14, 1979, Ser. No. 75,432
Int. Cl.³ G10H *1/38, 5/00*
U.S. Cl. 84—1.01 **11 Claims**



1. Apparatus for selecting a musical chord type and its root note from a set of preselected musical chord types in a musical instrument having a keyboard with a plurality of key switches comprising:

a clock providing a sequence of timing signals,

a status memory means for storing data corresponding to actuated note switches in said plurality of key switches,

a first memory means for storing data to be thereafter read out,

a transfer means whereby data is read from said status memory and stored in said first memory,

a second memory means for storing a plurality of transfer functions each corresponding to a musical chord type,

a correlation evaluation means responsive to selected members of said plurality of transfer functions and responsive to data accessed from said first memory wherein a plurality of correlation numbers are generated,

a third memory means wherein a correlation number is stored to be thereafter read out,

a comparison means for comparing the magnitude of each of said plurality of correlation numbers with the correlation number stored in said third memory means wherein a correlation number having the maximum magnitude value is selected and stored in said third memory means, and

a selection means responsive to said timing signals and said correlation number having a maximum magnitude value wherein a selection is made of a musical chord type from said preselected musical chord types and a selection is made of a corresponding root note.

4,282,787

ELECTRONIC MUSICAL INSTRUMENT SIMULTANEOUSLY OPERABLE IN MONOPHONIC AND POLYPHONIC MODES

Richard M. Walborn, Tonawanda, N.Y., assignor to Norlin Industries, Inc., Deerfield, Ill.

Filed Feb. 19, 1980, Ser. No. 122,340
Int. Cl.³ G10H *1/00*
U.S. Cl. 84—1.01 **11 Claims**

1. An electronic musical instrument having combined monophonic and polyphonic sound producing capabilities comprising:

a plurality of player operable keys each representing a different pitch of a musical scale;

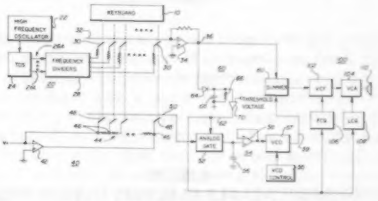
polyphonic means for producing a first audio signal having frequency components representing the pitches of all of said keys which are depressed;

means for producing a gate signal in response to the detection of the presence of said first audio signal;

monophonic means enabled in response to said gate signal for producing a second audio signal having a frequency representing the pitch of only one of said keys which are depressed;

means for producing a third audio signal representing the sum of said first and second audio signals; and

output means responsive to said gate signal for controllably processing said third audio signal.



7. In an electronic musical instrument of the type having a keyboard and an output system, the improvement comprising:

means for developing a polyphonic audio signal in accordance with the operation of said keyboard;

means for producing a gate signal in response to said polyphonic signal;

a voltage controlled oscillator;

means developing a voltage control signal representing the pitch of a single depressed key of said keyboard;

gate means responsive to said gate signal for coupling said voltage control signal to said voltage controlled oscillator for developing a monophonic audio signal representing said single operated key; and

means for coupling said polyphonic and monophonic audio signals to said output system.

4,282,788

ELECTRONIC MUSICAL INSTRUMENT WITH AUTOMATIC CHORD PERFORMANCE DEVICE

Eiichi Yamaga; Junji Iio; Toshio Takeda; Akira Nakada, and Akio Imamura, all of Hamamatsu, Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Nov. 27, 1979, Ser. No. 97,717
Claims priority, application Japan, Nov. 27, 1978, 53/146168
Int. Cl.³ G10F *1/00*
U.S. Cl. 84—1.03 **16 Claims**

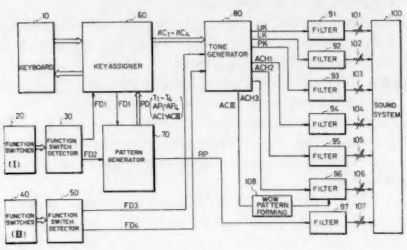
1. An electronic musical instrument with an automatic chord performance device comprising:

a pattern generator including a memory for storing a plurality of automatic chord performance tone generating patterns, said plural patterns being read out concurrently as plural chord tone generation timing signals from said memory;

chord tone signal producing means for producing a complete set of chord tone signals having tone pitch relation constituting a chord to be played; and

a plurality of envelope control circuits each separately, concurrently imparting an amplitude envelope to said complete set of chord tone signals in response to a respective one of said plural chord tone generation timing signals, so as to produce duplicates of said complete set of

chord tone signals each with a respective different amplitude envelope pattern for the same one rhythm, and



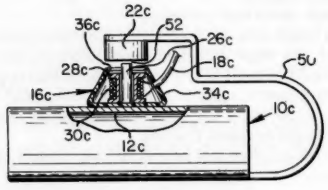
a common sound system for reproducing all of said duplicated sets of chord tone signals.

4,282,789

FINGER MOUNTABLE ELECTRIC GUITAR PICK-UP

Steven H. Lamborn, 3217 S. 368th Pl., Federal Way, Wash. 98003

Filed Aug. 1, 1977, Ser. No. 820,778
Int. Cl.³ G10H *3/00*
U.S. Cl. 84—1.15 **1 Claim**



1. A guitar pick-up apparatus comprising:

string contacting means for contacting a guitar string to alter the vibrational frequency thereof; and

a transducer mechanically connected to said string contacting means for producing electrical impulses which correspond to the vibrations of said string when said contacting means is in contact with said string, said transducer including:

a. an elongated iron core radiating outwardly from said contacting means;

b. an electrically conducting coil surrounding said core;

c. an arm extending from said contacting means to a position just outward of said core;

d. a permanent magnet positioned on said arm so that it is located adjacent to, but out of contact with the outermost end of said core; and

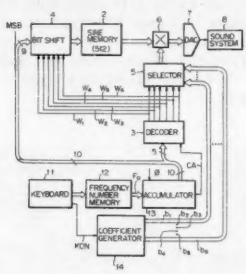
e. mounting means to hold said coil and core to said contacting means in such a fashion that said magnet is free to move relative to said coil so that, when said contacting means is held against a vibrating guitar string, said contacting means vibrates and said magnet moves relative to said coil so that the reluctance of the magnetic circuit is varied and an output voltage, proportional to the vibration velocity, is produced in said coil.

4,282,790

ELECTRONIC MUSICAL INSTRUMENT

Masatada Wachi, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Aug. 20, 1979, Ser. No. 67,693
Claims priority, application Japan, Aug. 29, 1978, 53-104345
Int. Cl.³ G10H *1/08, 5/00*
U.S. Cl. 84—1.21 **16 Claims**



1. An electronic musical instrument comprising:

means for repeatedly generating a waveshape having a frequency which changes as a function of time from the start point of said waveshape, said start point of said waveshape being synchronized with a predetermined phase point of the fundamental period of a musical tone to be generated and said waveshape being terminated within a period of said fundamental period of said musical tone;

an amplitude control means for controlling the amplitude of said waveshape in correspondence with said frequency changing as a function of time within said fundamental period; and

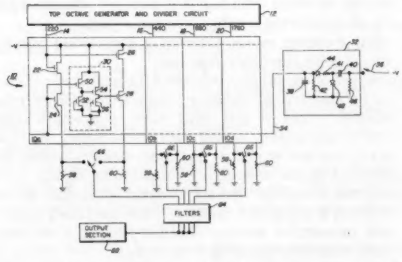
a sound system means for producing a musical tone from the output of said amplitude control means.

4,282,791

KEYER SYSTEM FOR AN ELECTRONIC ORGAN

Ray B. Schrencongost, Park Ridge, Ill., assignor to Marmon Company, Chicago, Ill.

Filed Dec. 26, 1979, Ser. No. 106,724
Int. Cl.³ G10H *1/053, 1/08*
U.S. Cl. 84—1.26 **14 Claims**



1. A keying system for use in an electronic organ having a top octave generator and divider circuit for providing a plurality of rectangular wave signals at various frequencies and a keyboard for providing a keying signal upon depression of any key, said keying system comprising:

a keying block having a plurality of keying sections each of said keying sections having at least a first and a second semiconductor switching element, all of said semiconductor elements having an input, a control and an output;

a source of direct current potential and a source of reference potential, said direct current potential being connected to

the input of the first semiconductor element of each of said sections;

first conductor means for connecting the output of the first semiconductor element of each section to the input of the second semiconductor element of the same section;

a plurality of load resistors connected individually between the outputs of said second semiconductor elements and said source of reference potential;

second conductor means for connecting the rectangular wave signals from said top octave generator and divider circuit individually to the controls of the first semiconductor elements of each section; and

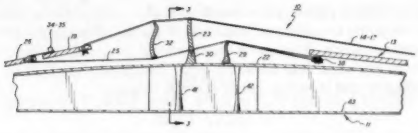
envelope means including a source of keying potential for applying an envelope signal to the controls of the second semiconductor elements of said keying sections upon depression of a key on said keyboard characterized in that at least one of said second semiconductor elements has a selectable threshold of conductivity which differs from the threshold of conductivity of the second semiconductor elements of the other keying sections whereby the decay time of the component keyed by said at least one keying section is selectable and differs from the decay times for the components keyed by said other keying sections.

4,282,792

COUNTER PRESSURE SYSTEM FOR STRINGED INSTRUMENTS

Peter Voorthuyzen, 113 Ball Ave., Canastota, N.Y. 13032

Filed Jul. 23, 1979, Ser. No. 59,735
Int. Cl.³ G10D *3/00, 1/02, 3/04, 3/12*
U.S. Cl. 84—295 **26 Claims**



20. A stringed instrument having a plurality of melody strings supported above the belly of a sound box upon a main bridge including

a string suspension system having a plurality of spaced-apart runs mounted beneath the melody strings of the instrument and being positioned along the belly of the sound box,

a counter pressure bridge seated in biasing contact against both the melody strings and the suspension system runs with the top of said bridge in contact with the melody strings and the bottom of said bridge seated upon said runs, and

an auxiliary bridge, with said auxiliary bridge spaced apart from said main bridge so as to contact said sound box at a different point from the main bridge, and having its top surface seated in contact against the suspension system runs.

4,282,793

COMPOSITE DRUM HEAD

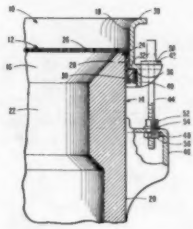
Samuel N. Muchnick, Los Angeles, Calif., assignor to Research Development Systems, Inc., S. El Monte, Calif.

Continuation-in-part of Ser. No. 910,116, May 30, 1978, abandoned. This application Jun. 4, 1979, Ser. No. 45,396
Int. Cl.³ B32B *3/02, 3/10;* **G10D** *13/02*
U.S. Cl. 84—414 **16 Claims**

1. A novel drum head membrane structure having a generally planar central portion and a turned down peripheral portion extending from said central portion a relatively short distance and essentially perpendicular thereto, said structure comprising an interwoven fabric made up of fibers of a polyaramide high molecular weight polymer rigidized with a cured and hardened epoxy resin comprising a cross-linked polymer of a polyglycidyl ether of a polyol, said fabric and epoxy cooperating to define interstitial voids forming air passing micropores in the drum head membrane structure.

4. A novel drum comprising:

a drum frame; and



a drum head pulled taut across said drum frame and comprising a membrane composed of an interwoven fabric made up of fibers of a polyaramide high molecular weight polymer rigidized with a cured and hardened epoxy resin comprising a cross-linked polymer of a polyglycidyl ether of a polyol, and a ring comprising said cured and hardened epoxy resin embedding the edge of said membrane; said fabric and said epoxy cooperating to define interstitial voids forming air passing micropores in said membrane.

4,282,794

SELF-PROPELLED OFF-ROAD VEHICLE

Avy L. Miller, deceased, late of Encino, Calif.; by Roberta L. Miller, deceased, late of Encino, Calif., and Lindsey Miller-Lerman, 715 J. E. George Blvd., Omaha, Nebr. (executor)

Filed Apr. 30, 1979, Ser. No. 34,430
Int. Cl.³ F41H *7/02*
U.S. Cl. 89—36 M **17 Claims**

1. A self-propelled off-road vehicle comprising:

a chassis;

platform means including a support platform and an operator platform adapted to support an operator;

first means operative to raise said platform means relative to said chassis;

sighting means carried by said operator platform and characterized by a sighting axis;

second means operative to raise said sighting means relative to said operator platform;

a weapons pod carried by said operator platform and characterized by a firing axis;

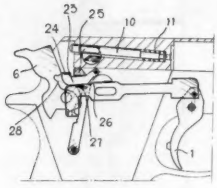
third means operative to raise said weapons pod relative to said operator platform to orient said firing axis in predetermined relation to said sighting axis; and

fourth means operative to rotate said operator platform relative to said chassis to direct said sighting axis toward a target area.

4,282,795
SAFETY FOR AN AUTOMATIC PISTOL

Pier C. Beretta, Gardone V.T., Italy, assignor to Fabbrica d'Armi Pietro Beretta S.p.A., Gardone V.T., Italy

Filed Sep. 18, 1978, Ser. No. 943,117
Claims priority, application Italy, Oct. 28, 1977, 5240 A/77
Int. Cl.[3] F41C *17/04*
U.S. Cl. 89—148 14 Claims



1. In an automatic pistol which includes a trigger, an arming rod connected at one of its ends to said trigger, a lever pivoted for angular displacements and cooperating with the other extremity of said rod, a hammer attached in an armed position to said lever and detached therefrom by means of said rod, and a firing pin having a rear extremity which is acted upon by said hammer, the improvement comprising:

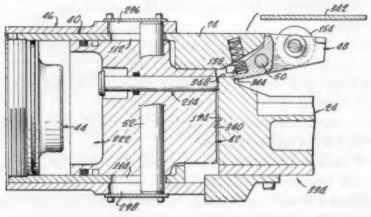
(a) manually-actuated safety means for blocking said firing pin in a neutral position and for deactivating said lever and said rod so that said lever and said rod cannot cooperate with each other and with said hammer; and

(b) automatic safety means for intercepting and blocking said hammer to prevent its contact with said firing pin, wherein said automatic safety means comprises a pendulum-like lever having a terminal tappet facing said hammer and having a lateral arm facing said arming rod so as to be in front of and cooperating with a tooth provided on said rod; said pendulum-like lever being actuated by a spring so as to keep it in the position wherein said tappet is interposed between the hammer and a stationary shoulder integral with the pistol; said tooth of said arming rod displacing said pendulum-like lever in an opposite direction when said hammer is disengaged.

4,282,796
DOUBLE ACTING, PNEUMATIC BOLT AND SEAR BUFFER FOR AUTOMATIC CANNON

Eugene M. Stoner, Stuart, Fla., and Richard R. Gillum, Marblehead, Ohio, assignors to ARES, Inc., Port Clinton, Ohio

Filed Mar. 27, 1979, Ser. No. 24,185
Int. Cl.[3] F41D *11/12*
U.S. Cl. 89—198 9 Claims



1. In an automatic cannon having a breech, a bolt assembly mounted for reciprocating movement along a recoil and counterrecoil path and triggering means for selectively controlling movement of the bolt assembly and firing of the cannon, double acting recoil and sear buffer apparatus, which comprises:

(a) a buffer housing disposed on the cannon rearwardly of the breech;

(b) a pneumatic buffer disposed in the housing, said buffer including a cylinder, means for closing a rearward end of the cylinder and a piston axially slidably disposed in the cylinder, said buffer further including searing means fixed to forward regions of the cylinder and responsive to the triggering means for searing up the bolt assembly on counterrecoil thereof,

said cylinder, said means for closing the rearward end thereof and said piston forming a gas pressure chamber adapted for containing a pressurized gas, said piston being operative for being driven rearwardly and compressing the pressurized gas contained in the pressure chamber in response to rearwardly directed bolt assembly recoil impact, said pressurized gas in the pressure chamber re-expanding after bolt assembly recoil is stopped to drive the bolt assembly towards the breech at a counterrecoil velocity approximately equal to bolt assembly recoil velocity, and said cylinder being operative for being driven forwardly and compressing the pressurized gas contained in the pressure chamber in response to forwardly directed searing up impact of the bold assembly against said searing means to soften bolt assembly searing up; and,

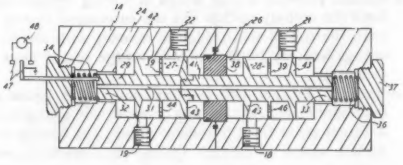
(c) travel limiting means for preventing rearward axial movement of the cylinder when the piston is driven rearwardly in response to bolt assembly recoil impact thereagainst and for preventing forward axial movement of the piston when the cylinder is driven forwardly in response to searing up impact of the bolt assembly against the searing means;

said travel limiting means including means defining corresponding slots in the housing and in the cylinder forwardly of the pressure chamber, said slots being elongated in a direction parallel to a barrel bore axis, said travel limiting means further including a piston pin mounted in the piston along an axis orthogonal to said bore axis, ends of the pin extending into said corresponding slots, axial travel of the pin and the piston in both rearward and forward axial directions, relative to the cylinder and housing, being thereby limited.

4,282,797
PROTECTIVE FLUID SYSTEM

Arthur E. Hirsch, Terre Haute, Ind., assignor to J. I. Case Company, Racine, Wis.

Continuation-in-part of Ser. No. 766,933, Feb. 9, 1977, abandoned. This application Dec. 4, 1978, Ser. No. 965,906
Int. Cl.[3] F01B *25/26;* F15B *13/042*
U.S. Cl. 91—1 14 Claims



1. A protective fluid system comprising a fluid pump and a fluid control valve and a fluid protective valve and a fluid motor means, all fluid-flow connected together with fluid lines and having said protective valve positioned closest to said fluid motor means and said fluid control valve being positioned between said pump and said fluid protective valve, said fluid motor means having two fluid-flow capacity requirements respectively with each separatately fluid-flow connected with said protective valve, said protective valve having a valve body with two fluid-flow separated compartments, an elongated valve spool disposed in said valve body and having each end extending into a respective one of said compartments and being axially movable therein, each end of said spool having two fluid-flow closure portions thereon and also having a

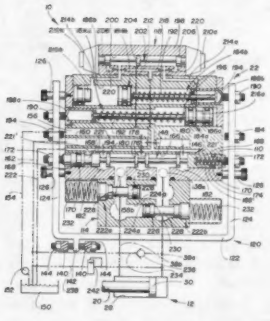
projection interposed between said two closure portions with fluid-flow orifices extending through said projections in the longitudinal axial direction of said spool, spool-centering springs in said valve body and acting on said spool for positioning said spool in a centered position to have fluid flow between said passageways in each of said pair of passageways, said orifices in said respective projections being of a total fluid-flow capacity equally proportioned relative to said two fluid-flow capacity requirements of said motor means to effect equal fluid pressure drop through said respective orifices when said motor means is experiencing fluid flow of its said two fluid-flow capacity requirements, said body having a pair of fluid-flow passageways extending into each of said two compartment and with the latter said passageways being spaced apart on said body in the longitudinal axial directions of said spool, said projections disposed on said spool to be positionable intermediate said passageways of each said pair of passageways and have said orifices respectively receive all the flow of fluid between said passageways in each said pair of passageways, said closure portions on each end of said spool disposed on said spool to be respectively positionable to one side of each of said pairs of passageways, in one axial position of said spool for the flow of fluid between said passageways in each of said pair of passageways and through said orifices, and to be respectively positionable between said passageways in each of said pair of passageways, in another axial position of said spool, to block the flow of fluid between said passageways in each of said pair of passageways, whereby an unequal fluid pressure drop through said orifices and thus on oposite sides of said projections axially shifts said spool for the blocking of fluid flow, said fluid control valve being of a type to create fluid back pressure in said fluid line connected therewith, whereby opening of said fluid control valve does not simulate a break in said fluid line to trigger said protective valve, and said protective valve being operable for blocking of fluid flow for breaks in said fluid line which do not effect a back pressure therein.

4,282,798

CONTROL VALVE UNIT FOR HYDRAULIC LINEAR ACTUATOR

Roland J. Barlow, Madison Heights, and David L. Keem, Royal Oak, both of Mich., assignors to Ex-Cell-O Corporation, Troy, Mich.

Filed Oct. 22, 1979, Ser. No. 87,274
Int. Cl.³ F15B *13/16*
U.S. Cl. 91—358 R **15 Claims**



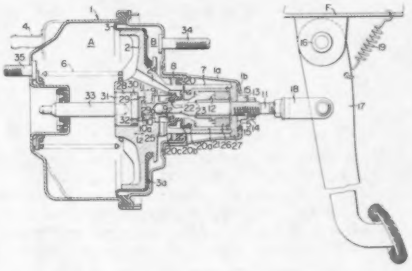
1. A control valve unit for a hydraulic linear actuator comprising: a base adapted to be mounted on the linear actuator; a control valve supported by the base and selectively operable to supply hydraulic fluid to the linear actuator to provide driving thereof in opposite directions; said control valve including a deactivator movable to terminate driving of the actuator in the associated direction; a slide mechanism on the base including a pair of movable slides; means for resiliently biasing the slides in opposite directions away from each other; said slides being movable against the bias thereof to engage and move the deactivator so as to terminate driving of the actuator; and a control member movable in response to driving of the actuator to respectively move the slides adjacent the limits of actuator movement in order to move the control valve deactivator and thereby terminate the driving of the actuator.

4,282,799

NEGATIVE PRESSURE BOOSTER

Hiroo Takeuchi, Ueda, Japan, assignor to Nissin Kogyo Kabushiki Kaisha, Ueda, Japan

Filed Oct. 10, 1979, Ser. No. 83,534
Claims priority, application Japan, Feb. 2, 1979, 54-11740
Int. Cl.³ F15B *9/10*
U.S. Cl. 91—369 A **2 Claims**



1. A vacuum-operated booster comprising: a booster shell, a booster piston dividing the interior of said booster shell into a first operating chamber in communication with a vacuum source and a second operating chamber; a valve cylinder, said valve cylinder extending from a rear end of said booster piston and having a first annular valve seat formed at the front end thereof; a valve piston, said valve piston having a second annular valve seat encircled by said first valve seat, said valve piston operatively connected to an input rod; a cylindrical resilient valve body biased to seat on said first and second valve seats and having a hollow interior in communication with the atmosphere; said booster piston having a large diameter bore open to a forward end surface thereof and a small diameter bore open to a rear end wall of said large diameter bore; an output piston, said output piston being slidably received in said large diameter bore and operatively connected to an output rod; a resilient piston, said resilient piston being slidably received in said large diameter bore between said output piston and the rear end wall of said large diameter bore, so as to be compressively deformed by said output piston, said valve piston having its forward end present in said small diameter bore; a reaction piston, said reaction piston being slidably disposed in said small diameter bore between said valve piston and said resilient piston for transmitting the compressive force of said resilient piston to said valve piston, whereby said second chamber and the hollow interior of said resilient valve body being brought into communication with each other through a clearance formed between said second valve seat and said resilient valve body when said valve piston is moved forward; a clearance formed between said first valve seat and said resilient valve body to bring said first and second chambers into communication with each other when said valve piston is moved rearward, and said resilient valve body being compressively deformed in an axial direction by the rearward movement of said valve piston, after abutment of said reaction piston against the end wall of said small diameter bore whereby, the sliding stroke of said reaction piston being made smaller than that of said valve piston.

4,282,800
FLUID PRESSURE ACTUATOR

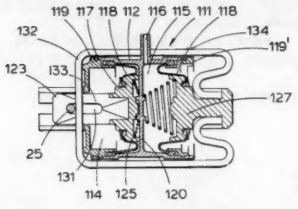
Alastair J. Young, Kenilworth, and John P. Burke, Leamington Spa, both of England, assignors to Automotive Products Limited, Warwickshire, England

Filed Oct. 10, 1979, Ser. No. 83,225

Claims priority, application United Kingdom, Oct. 16, 1978, 40698/78

Int. Cl.[3] **E05B** *65/38;* **F01B** *19/00*

U.S. Cl. 92—37 **6 Claims**



1. A fluid pressure servo motor comprising:

a body;

two co-axial fluid chambers supported by the body and being operatively independent

a pair of co-axial piston means located one in each chamber and being movable in opposite directions in response to a pressure in their respective chamber, a two condition member movable in opposite directions from one to the other of said two conditions by said pair of piston means, and each piston means having a lost-motion means connection with said member for abutting engagement therewith and to allow idle return of the piston means without movement of said member in the event of cessation of the pressure; and a stirrup formed from a loop of wire which is fixed to one piston means and bridges the other piston means to act in use against the two position member, said other piston means and said stirrup defining a lost motion connection therebetween such that said other piston means is able to move independently of the stirrup.

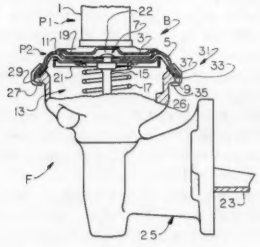
4,282,801
CRASHWORTHY FUEL PUMP

Walter E. Basch, St. Louis, and John W. Haney, Florissant, both of Mo., assignors to ACF Industries, Inc., New York, N.Y.

Filed Oct. 1, 1979, Ser. No. 80,267

Int. Cl.[3] **F01B** *19/02;* **F04B** *43/12*

U.S. Cl. 92—102 **1 Claim**



1. In a fuel pump for use in an automotive fuel system, the fuel pump including a body having a first portion in which is formed a fuel intake cavity and a fuel discharge cavity and a second portion in which is formed a fuel pumping chamber, a flexible diaphragm enclosing the pumping chamber, the diaphragm being insertable into the open end of the second portion of the body with the periphery of the fuel pump body at the open end thereof having a lip formed therearound which is bent over the outer margin of the diaphragm to clamp the diaphragm within the pump body and form a fluid tight seal therewith; and means for flexing the diaphragm to pump fuel into and out of the pumping chamber through the respective intake and discharge cavities, the improvement comprising:

a housing for the flexing means, the housing having a hollow pump head with an outwardly extending circumferential rim, the upper face of the rim being downwardly and outwardly sloping with an upwardly extending circumferential lip at the outer margin of the rim, the sloping upper face of the rim and the lip forming a circumferential groove, the housing abutting with the pump body so the fluid seal forming portion of the pump body is received in the groove with the circumferential housing lip being bent over the outer surface of the pump body to complete a unified fuel pump assembly, capable of withstanding abnormal forces such as occur during an automobile crash without a fuel leak resulting.

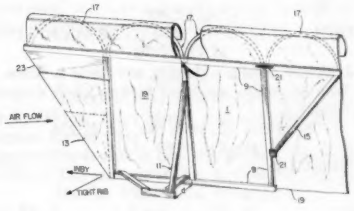
4,282,802
SLIDEBOARD DEVICE FOR UNDERGROUND MINE FACE VENTILATION

Edward F. Divers, and John C. LaScola, both of Pittsburgh, Pa., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Mar. 31, 1980, Ser. No. 136,126

Int. Cl.[3] **F24F** *7/00*

U.S. Cl. 98—50 **5 Claims**



1. A self-supporting movable slideboard apparatus for use in improving underground mine face ventilation in conjunction with a stationary line brattice comprising:

a main frame assembly extending in a vertical and horizontal direction and having a plurality of interconnected rigid frame support members, at least one of the members being a horizontal member in slideable contact with the mine floor;

a plurality of flexible supports mounted on said main frame and extending in seriatim the length thereof and upwardly therefrom to engage the mine roof in an operative mode;

a vertical support assembly attached to the main frame near its lower portion and extending in a tranverse direction therefrom to act as a support and spacer between the apparatus and an adjacent mine wall;

vertical pivot means connecting at least two of said rigid frame support members together located towards the rear of the sideboard apparatus; and

a layer of air impervious material covering the main frame and flexible support to control and direct the passage of air between the appratus and an adjacent mine wall whereby the rear portion of the apparatus overlaps the line brattice used therewith.

4,282,803
TWINE WRAPPER FOR ROUND BALE FORMING MACHINE

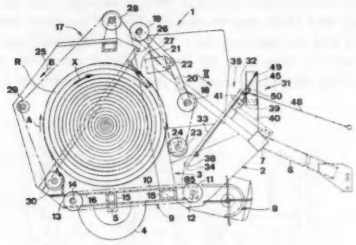
Antoon S. P. Cools, Brugge St. Kruis, Belgium, assignor to Sperry Corporation, New Holland, Pa.

Filed Nov. 27, 1979, Ser. No. 97,760

Claims priority, application United Kingdom, Nov. 28, 1978, 46259/78

Int. Cl.³ B65B *13/18*

U.S. Cl. 100—5 **7 Claims**



1. In a crop material roll forming machine having:

(a) a frame,

(b) means on the frame defining a roll forming region,

(c) a dispensing mechanism pivotally mounted on the frame adjacent one end and pivotable back and forth across the machine with its opposite end movable along a predetermined arcuate path in the vicinity of a roll forming region to dispense material for wrapping a bale formed in the roll forming region, the path having its point closest to the roll forming region intermediate a rest position and a maximum stroke position,

(d) spring means extending between a fixation point on the dispensing mechanism at one side relative to the pivotal mounting of the dispensing mechanism and a fixation point on the frame at the opposite side relative to the pivotal mounting of the dispensing mechanism and operable to urge the dispensing mechanism in a first direction away from the rest position towards the maximum stroke position while dispensing wrapping material,

the improvement comprising:

(e) said spring means being attached to the dispensing mechanism relative to the pivotal mounting thereof such that during the pivotal movement of the dispensing mechanism from said intermediate position to said maximum stroke position said spring means act through a moment arm of increasing length, and

(f) control means connected to the dispensing mechanism and operable to move the dispensing mechanism in a second direction opposite to that induced by said spring means.

4,282,804
TWINE WRAPPER FOR ROUND BALE FORMING MACHINE

Antoon S. P. Cools, Brugge, Belgium, assignor to Sperry Corporation, New Holland, Pa.

Filed Nov. 27, 1979, Ser. No. 97,761

Claims priority, application United Kingdom, Nov. 28, 1978, 46259/78

Int. Cl.³ B65B *13/18*

U.S. Cl. 100—5 **8 Claims**

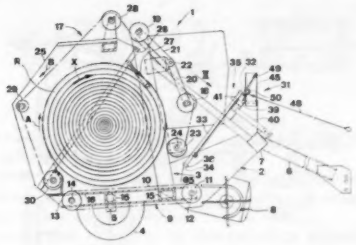
1. A roll forming machine comprising

(a) a mobile frame,

(b) a roll forming region defined within the frame,

(c) dispensing means mounted to the frame and movable across the roll forming region to dispense wrapping material about a completed roll being formed in the machine, said dispensing means comprising an elongate wrapping material directing arm with an inlet and an opposed outlet for the wrapping material, the improvement comprising

(d) tensioning means mounted on the wrapping material directing arm intermediate its inlet and outlet ends and operable to tension the wrapping material as it is being applied to a roll, and



(e) means engageable with the tensioning means to render the latter inoperative at a predetermined point in the dispensing movement of the wrapping material directing arm.

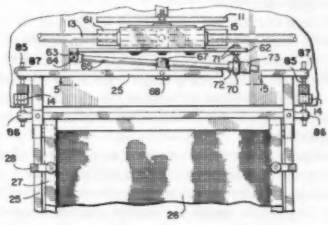
4,282,805
DRIVE FOR PRINTING ELONGATED ARTICLES

Louis A. Lala, Cook County, Ill., assignor to American Screen Printing Equipment Company, Chicago, Ill.

Filed May 21, 1979, Ser. No. 40,492

Int. Cl.³ B41F *17/22*; B41L *13/18*

U.S. Cl. 101—38 R **8 Claims**



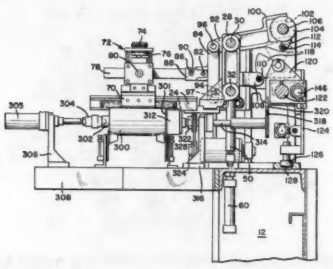
1. A printing press for printing on elongated articles, said printing press comprising primary support shafts, a squeegee assembly, a screen assembly, said shafts supporting said screen assembly for lateral and vertical movement and said squeegee assembly for vertical movement, a workholder for securing an elongated cylindrical article to be printed on, the article being mountable on said workholder for rotation about a longitudinal axis, said longitudinal axis being fixedly held by said workholder parallel to said shafts for presentation of a circumferential surface of said article to said screen assembly in a print mode, said screen assembly being movable in a direction perpendicular to said shafts over said article by a drive means, and immovable in a direction parallel to said shafts, said drive means comprising a drive carriage reciprocally movable on a stationary shaft, a screen drive shaft means connected by a pivotal connection at a first end portion to said drive carriage and a means for adjustably securing a second end portion of said screen drive shaft means to said drive carriage with said first end portion closer to said drive carriage than said second end portion, said screen assembly being connected to said screen drive shaft means by sliding means for free reciprocal movement of said screen drive shaft means parallel to said stationary shaft, said screen assembly thereby being reciprocally movable toward and away from said stationary shaft in its following movement on said sliding means.

4,282,806

SILK SCREEN PRINTING MACHINE

Louis A. Lala, Chicago, Ill., assignor to American Screen Printing Equipment Company, Chicago, Ill.

Filed Jul. 24, 1978, Ser. No. 927,553
Int. Cl.³ B41F *15/08, 15/30, 15/42*
U.S. Cl. 101—38 R **6 Claims**



1. A screen printing machine, comprising:

a machine frame;

screen carrier support means having at least one horizontally extending support member, and a pair of end rods disposed in spaced parallel relation in a vertical plane supported on said frame and supporting said support member for up and down movement;

a screen carrier laterally movably mounted to said screen carrier support means for vertical movement therewith;

first pneumatic drive means directly engaging both said end rods for causing said up and down movement of said screen carrier support means on command;

a squeegee carrier;

a squeegee carrier support means supported by said screen carrier support means for vertical movement therewith and for laterally movement thereon and connected thereto with a parallelogram linkage means for causing relative movement between said squeegee carrier and said screen carrier upon vertical movement of said screen carrier support means;

second pneumatic drive means comprising a double acting pneumatic cylinder means disposed parallel to said at least one horizontally extending support member and extending the length of maximum reciprocal movement of said squeegee carrier support means and said screen carrier;

a first yoke member secured to a central portion of said squeegee carrier support means;

a second yoke member secured to a central portion of said screen carrier; and,

a connector arm pivotally mounted to a bracket driven by a piston portion of said pneumatic cylinder means for reciprocal movement therewith and selectively engagable with said first or second yoke member for causing lateral reciprocal movement of either.

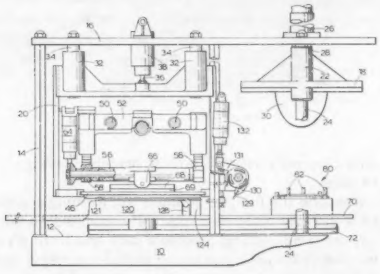
4,282,807

OFF-SET SCREEN-PRINTING MACHINE FOR DECORATING CERAMIC WARE

Frederick A. Turnock, Stoke-on-Trent, England, assignor to Service (Engineers) Limited, Stoke-on-Trent, England

Filed May 25, 1979, Ser. No. 42,640
Claims priority, application United Kingdom, Feb. 2, 1979, 03741/79
Int. Cl.³ B41F *17/00*
U.S. Cl. 101—41 **6 Claims**

1. An off-set screen-printing machine for use in applying a design in colour to the surfaces of a succession of articles, such as articles of ceramic ware, comprising a transfer plate affording a flat, non-absorbent, highly finished surface constituting an intermediate surface, screen-printing means enabling a design in colour to be applied by a screen-printing process on to that intermediate surface, an article support for supporting an article to which the design is to be applied, and a deformable transfer pad in the shape of an inverted dome enabling the design in colour to be transferred from the intermediate surface to an article on the article support, the machine being operable cyclically in such a manner that, in each cycle, first registration is effected between the screen and the intermediate surface and colour is applied through the screen on to that surface, second registration is effected between the transfer pad and the intermediate surface and colour is picked up from that surface by the pad, and third registration is effected between the article support and the pad and the colour is transferred from the pad to an article supported by the article support, the machine comprising also plate cleaning means for removing from the



intermediate surface, before the application of colour through the screen each cycle, any residual colour remaining after the design in colour has been transferred by the transfer pad from the surface to an article on the article support in the previous cycle, said cleaning means comprising a wiper blade mounted to engage the transfer plate with the blade extending across the intermediate surface, means operative to cause relative movement between the blade and the plate with the blade in engagement with said intermediate surface so that the blade sweeps the surface to remove any residual colour therefrom, blade wiping means, and means operative to cause relative movement between the blade and said wiping means with the blade in engagement with the wiping means so that the wiping means wipes the blade to remove from the blade colour previously removed by the blade from the plate.

4,282,808

LABEL MACHINE

Bobby J. Clay, Cincinnati, Ohio, assignor to Natmar, Inc., Cincinnati, Ohio

Division of Ser. No. 920,178, Jun. 29, 1978, Pat. No. 4,248,112.
This application Jun. 4, 1979, Ser. No. 45,201
Int. Cl.³ B41J *3/24*
U.S. Cl. 101—93.07 **17 Claims**

1. A machine for forming tape sections of a predetermined length from an endless tape strip, said machine comprising

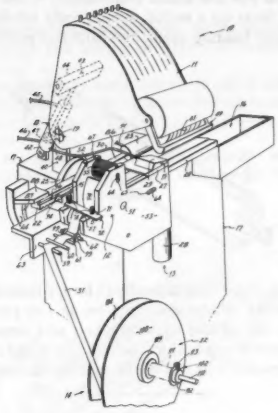
a tape feed mechanism adapted to contact said endless strip, said tape feed mechanism extending said endless strip a predetermined length in response to operation thereof,

a cutter assembly for cutting a tape section of said predetermined length from said endless strip after extension thereof,

an ejector nozzle positioned in operational relation with said cutter assembly, said ejector nozzle being connectable with an air source, air discharged from said ejector nozzle being operable to blow each tape section away from said cutter assembly to a collection station after said tape section has been cut from said endless strip, and

pneumatic motor means connected with said machine, said

pneumatic motor means being operable during a work stroke to power at least one component of said machine,



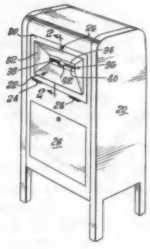
the exhaust air of said pneumatic motor means providing the air source for said ejector nozzle.

4,282,809

MAILBOX LETTER CANCELER

Vernon Stewart, 2146 Sonora, Pomona, Calif. 91767

Filed Aug. 8, 1979, Ser. No. 64,718
Int. Cl.³ B41F *5/00, 31/22*
U.S. Cl. 101—212 **7 Claims**



1. A stamp canceler positionable in a mailbox so that the mail is canceled as it is inserted in the mailbox, said canceler including:

a front panel having a narrow slot for receipt of mail defined therein, said defined slot having first and second opposite ends and a finger hole defined centrally therein;

means to connect said canceler to the mailbox;

at least one canceling roller adjacent said first end of said slot and laterally spaced from said finger hole, said at least one canceling roller having a cylindrical surface and a canceling die on said cylindrical surface about the periphery thereof;

at least one pressure roller having a cylindrical surface facing said cylindrical surface of said at least one canceling roller, said at least one canceling roller and said at least one pressure roller being positioned to receive mail inserted through said slot therebetween so the mail is pressured against said canceling die; and

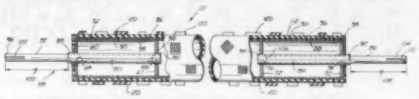
means to apply canceling ink to said canceling die, said defined finger hole extending from said front panel to beyond the position the mail is pressured against said canceling die, whereby a finger can push the mail through and out of said canceling and pressure rollers.

4,282,810

PRINT ROLLER

James F. Ellis, Box 100B Chandler Rd., LaFayette, Ga. 30728

Filed Jun. 11, 1979, Ser. No. 43,432
Int. Cl.³ B41F *27/00*
U.S. Cl. 101—376 **7 Claims**



1. An improved print roller for applying a dyestuff to a textile substrate which comprises:

a hollow cylindrical body member having a first end, an opposed second end, a generally smooth cylindrical exterior surface and a cylindrical interior surface;

a first end plate secured to the first end of the hollow cylindrical body member, the first end plate having a substantially centrally disposed aperture therein;

a second end plate secured to the opposed second end of the hollow cylindrical body member, the second end plate having a substantially centrally disposed aperture therein;

a plurality of support members fixably disposed within the hollow cylindrical body member, the support members having an aperture therein which is aligned with the apertures in the first and second end plates;

a first shaft having a first end portion and an opposed second end portion, the opposed second end portion of the first shaft being disposed within the apertures of the first end plate and at least one support member and secured thereto such that the first end portion of the first shaft extends outwardly from the first end plate along the central longitudinal axis of the hollow cylindrical body member;

a second shaft having a first end portion and an opposed second end portion, the first end portion of the second shaft being disposed within the apertures of the second end plate and at least one support member and secured thereto such that the opposed second end portion of the second shaft extends outwardly from the second end plate along the central longitudinal axis of the hollow cylindrical body member, at least one of the first end portion of the first shaft and the opposed second end portion of the second shaft operably connectable to a driving means for rotating the hollow cylindrical body member;

a first tubular sleeve disposed upon and affixed to the opposed second end portion of the first shaft;

a second tubular sleeve disposed upon and affixed to the first end portion of the second shaft;

cover means securely affixed to the generally smooth cylindrical exterior surface of the hollow cylindrical body member for encapsulating same, said cover means being formed of a substantially impervious elastomeric material; and

at least one dye applicator having a first side and an opposed second side, the applicator being fixably mounted to the cover means on its first side, the opposed second side having a dyestuff carrying surface.

4,282,811

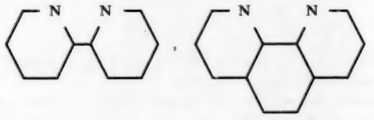
METHOD FOR DESENSITIZING OFFSET PRINTING PLATES

Masayuki Kuzuwata, Yokohama; Hazime Machida, Tokyo; Hiroshi Tamura, Fujisawa, and Tadashi Saito, Yokohama, all of Japan, assignors to Ricoh Co., Ltd., Tokyo, Japan

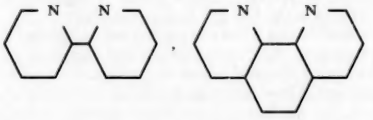
Division of Ser. No. 878,400, Feb. 16, 1978, Pat. No. 4,208,212.
This application Aug. 10, 1979, Ser. No. 65,487
Claims priority, application Japan, Feb. 22, 1977, 52-18568
Int. Cl.³ B41M *1/00*
U.S. Cl. 101—451 **15 Claims**

1. A method for desensitizing an offset printing plate which

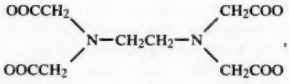
comprises applying an aqueous desensitizing composition consisting essentially of at least one complex to a non-image area of the offset printing plate having an oleophilic image formed thereon in an amount effective to desensitive said non-image area, said complex being selected from the group consisting of compounds having the formula I, $[M(X_1)_a](Y)_b.cH_2O$, wherein M is selected from the group consisting of Ir, Co, Ti, Fe, Cu, Ni, Pt, Mn, Ru, Rh, Hf, V, Be and Pd, X_1 is NH_3, OH_2, $H_2N(CH_2)_2NH_2$, C_2O_4, NO, NO_2, OCHO, NH_2, $HONC(CH_3)C$, $(CH_3)NO$,



OCN_2H_4 or $OC(NH_2)_2$, Y is an anion, "a" is a number in the range of from 2 to 6, "b" is a number in the range of from 1 to 3 and "c" is 0 or a number in the range of from 1 to 10, compounds having the formula II, $[M(X_1)_a, (X_2)_{a''}](Y)_b.cH_2O$, wherein M, X_1, Y, "b" and "c" are respectively the same as in formula I, X_2 is OH, OH_2, NO_2, CO_3, NH_2CH_2COO, $HONC(CH_3)C(CH_3)NO$, Br, Cl, $H_2N(CH_2)_2NH_2$, N, ONO_2, ONO, NCS, H_2O,



F or I, and "a'" and "a''" are respectively a number in the range of from 1 to 5, compounds having the formula III, $(M_1)_p[(M_2)(X_3)_q].nH_2O$, wherein M_1 is Na, K, NH_4 or hydrogen, M_2 is selected from the group consisting of Ir, Co, Ti, Fe, Cu, Ni, Pt, Mn, Ru, Rh, Hf, V, Be and Pd, X_3 is C_2O_4, NO_2, Cl, Br, I or



"p" is a number in the range of from 1 to 3, "q" is a number in the range of from 1 to 6, and "n" is 0 or a number in the range of from 1 to 10, compounds having the formula IV, $(M_1)_p[(M_2)(X_3)_q(X_4)_r].nH_2O$, wherein M_1, M_2, X_3, "p", "q" and "n" are respectively the same as in the formula III, X_4 is NH_3 or $NH_2CH_2CH_2NH_2$, and "r" is a number in the range of from 1 to 6, and compounds having the formula V, $(M_1)_p[(M_2)(X_3)_q(X_4)_r(X_5)_s].nH_2O$, wherein M_1, M_2, M_3, "p", "q" and "n" are respectively the same as in the formula III, X_4 and "r" are respectively the same as in the formula IV, X_5 is C_2O_4, NO_2, Cl or Br, and "s" is a number in the range of from 1 to 6.

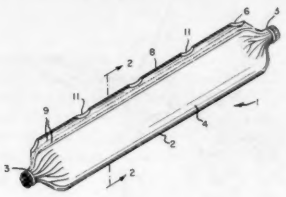
4,282,812

FIELD-PRIMABLE CHUB CARTRIDGE HAVING A LONGITUDINAL THREADING TUNNEL INTEGRAL THEREWITH

James H. Forgey, Martinsburg, W. Va.; Donald R. Stephens, Wilmington, Del., and Engnam A. Tan, Hagerstown, Md., assignors to E. I. Du Pont de Nemours & Company, Wilmington, Del.

Filed Apr. 6, 1979, Ser. No. 27,882
Int. Cl.³ C06C *11/00*
U.S. Cl. 102—318 **26 Claims**

1. A blasting cartridge of the chub type comprising a generally cylindrical body of plastic film gathered and closed at both ends and containing a water-bearing blasting agent, said generally cylindrical body comprising a web of film wrapped about a longitudinal axis and sealed continuously in the direction of said axis to form (a) a sealed, substantially tubular enclosure filled with said blasting agent, and (b) a flap portion, said flap



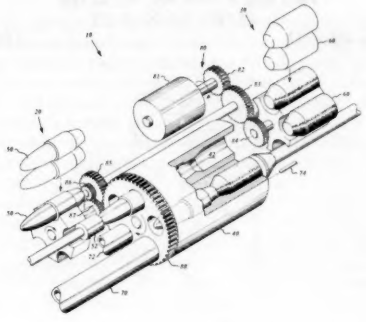
portion being sealed longitudinally to form a tunnel adjacent to the substantially tubular enclosure on an axis parallel to the longitudinal axis of said enclosure, and said tunnel having a portion of its wall exposed to allow access to the tunnel without destroying the integrity of the tubular enclosure.

4,282,813

TWO PIECE CASELESS ROUND AND GUN THEREFOR

Gerald A. Sterbutzel, Bowmansville, N.Y., assignor to Calspan Corporation, Columbus, Ind.

Filed Dec. 15, 1978, Ser. No. 970,086
Int. Cl.³ F42B *5/02*
U.S. Cl. 102—431 **2 Claims**



1. A two-piece non-telescoped caseless cartridge including a projectile portion and a propellant portion which are separately fed to a firing chamber of a gun, said propellant portion including:

a shaped propellant charge;

an ablator material disposed at an end portion of said propellant charge adjacent said projectile; and

a heat shrinkable polyester film encapsulating said propellant charge and said ablator material separately from said projectile.

4,282,814

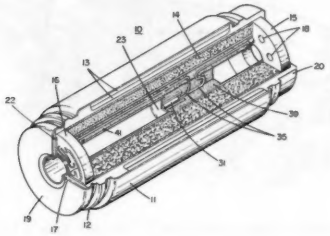
DUAL-END WARHEAD INITIATION SYSTEM

Fredric L. Menz, and Gordon A. Greene, both of Ridgecrest, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 20, 1974, Ser. No. 535,068
Int. Cl.³ F42B *13/02*
U.S. Cl. 102—318 **4 Claims**

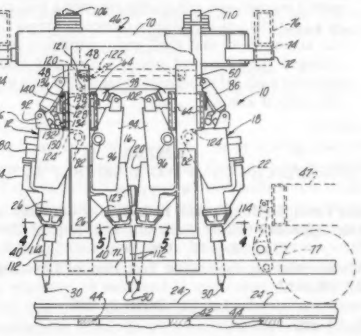
1. An initiation apparatus for use in explosive warhead for causing substantially simultaneous initiation at the plurality of predetermined zones of the explosive warhead comprising;

an explosive charge positioned with a chamber;
said explosive charge being formed as a body having a substantial wall thickness and a cavity extending therethrough;
a centrally located initiation transfer means within said explosive charge and having primary and secondary ignitors;
said initiation transfer means being a cylindrical substantially thin walled metal angular container having an expandable detonator train housing formed to extend along the longitudinal axis of said container;
first shock absorbing means located centrally within said annular container and positioned substantially from either end of said annular container;



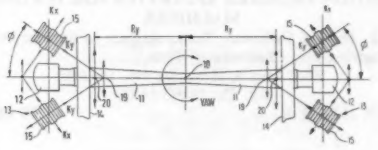
second shock absorbing means positioned within said detonator train housing;
a multiplicity of detonator trains of equal length interconnecting said primary and secondary ignitors;
booster explosive means positioned adjacent said secondary ignitor and said explosive charge; and
actuator means positioned adjacent said primary ignitor for ignition of said primary ignitor;
whereby the actuator means ignites the primary charge thereby causing detonating fronts to travel through the detonator trains to cause detonating of the secondary ignitors which in turn causes the booster explosive to initiate the explosive charge.

4,282,815
RAILROAD TAMPING MACHINE
Helmuth von Beckmann, Columbia, S.C., assignor to Canron Corp., West Columbia, S.C.
Filed Oct. 12, 1979, Ser. No. 84,307
Int. Cl.³ E01B *27/14*
U.S. Cl. 104—12 **17 Claims**



1. A railroad tamping machine mounted on a railroad vehicle for movement along the track comprising; a pair of work heads each including a pair of tamping units arranged longitudinally of a rail of said track with said pair of tamping units of each tamping head being disposed at opposite sides of one tie of a pair of adjacent ties, and one tamping unit of each of said tamping heads being disposed between adjacent ties, said pair of tamping units of each tamping head being supported for swinging movement about horizontal axes extending transversely of said track toward and away from each other at opposite sides of an associated tie, said pairs of tamping heads being supported relative to said vehicle for vertical movement simultaneously and independently of each other, and means to hold one of said tamping heads in an elevated inoperative position relative to one tie while the other of said tamping heads is in an operative position relative to an adjacent tie.

4,282,816
ELASTOMERIC RAILWAY SUSPENSION
Reginald Harrison, Leicestershire, England, assignor to Dunlop Limited, London, England
Filed May 31, 1979, Ser. No. 44,357
Claims priority, application United Kingdom, Jun. 10, 1978, 26666/78
Int. Cl.³ B61F *5/30, 5/38, 5/50*
U.S. Cl. 105—224.1 **15 Claims**



1. A vehicle axle suspension comprising an axle supported at each end by a respective axle box, respective spring means acting between each axle box and an associated rigid vehicle mounting, each spring means comprising a pair of spring units arranged one on each side of said axle in the direction of movement of the vehicle, each spring unit comprising a plurality of layers of elastomeric material interleaved with reinforcing elements, the layers of elastomeric material in each spring unit lying in planes angled relative both to said direction of normal movement and to the direction of the length of said axle wherein the resultant compression stiffness of each spring unit lies in a plane which subtends an acute angle with respect to said axle and intersects said axle at a point between an associated axle box and the center of said axle, so that the effective spring centre of each spring means is displaced along the length of said axle and acts at a point between the axle centre and the associated axle box.

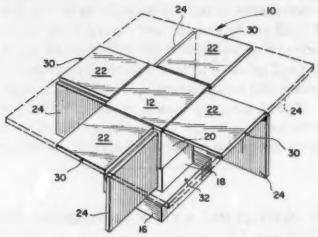
12. A suspension according to claim **11** in which the compression stiffness is twice that of the shear stiffness.

13. A suspension according to claim **11** in which the compression is twenty times that of the shear stiffness.

4,282,817
EXPANDABLE FURNITURE
Gary Gutterman, 160 E. 56th St., New York, N.Y. 10022
Filed May 29, 1979, Ser. No. 43,312
Int. Cl.³ A47B *83/00*; A47C *17/66*
U.S. Cl. 108—11 **9 Claims**

1. An article of furniture comprising
a pedestal and a table top, said table top including a central top portion, said pedestal comprising an expandable assembly to enable said top selectively to be at side table height and to be raised to be at dinner table height,
said central top portion having straight sides,
a panel extending from each of said sides and being hingedly connected thereto,
each of said panels including a side member and an extension member, said extension member hingedly connected to said side member,
said extension member being folded under said side member,

each of said panels being folded down about its respective hinge connection to sandwich said extension member



between said pedestal and said side member to form a cubular configuration when all of said panels are so folded down.

4,282,818

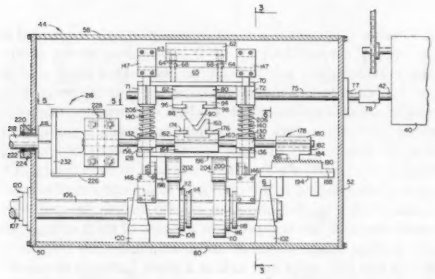
MOTION TRANSFER APPARATUS FOR TUFTING MACHINES

Gary L. Ingram, Ooltewah, Tenn., assignor to Spencer Wright Industries, Inc., Chattanooga, Tenn.

Filed May 8, 1980, Ser. No. 146,008

Int. Cl.³ D05C *15/00*

U.S. Cl. 112—79 R **18 Claims**



1. Apparatus in combination with a tufting machine having a reciprocating needle bar carrying a plurality of needles spaced transversely across the machine and adapted to penetrate a base material moving longitudinally thereof to insert a plurality of stitches upon each penetration of the base material, said machine including mounting means for permitting relative transverse movement between the needle bar and the base material, and a positioning device providing a controlled transverse step shift at an output drive member during a first portion of the needle bar reciprocation cycle, said apparatus comprising, a first drive coupling member, means connecting said member to said positioning device output drive member for transverse movement therewith, a second drive coupling member disposed for engagement with said first drive coupling member, said first and second drive coupling members having complementary engageable surfaces, the surface of said first drive coupling member constraining and directing the movement of said second drive coupling member when said members engage, actuating means driven in timed relationship with the reciprocation of said needle bar for moving the second drive coupling member into engagement with the first drive coupling member during a second portion of said cycle and for moving and maintaining said second drive coupling member out of engagement therewith during the remainder of said cycle, said second portion of said cycle being different than said first portion, and connecting means connecting said second drive coupling member to said mounting means for shifting the needle positions transversely relatively to said base material.

4,282,819

ADJUSTMENT DEVICE IN A SEWING MACHINE

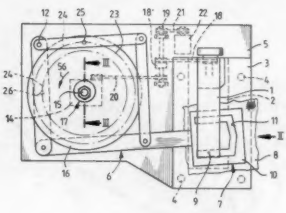
Friedhelm Sartor, Bielefeld, Fed. Rep. of Germany, assignor to Kochs Adler AG, Bielefeld, Fed. Rep. of Germany

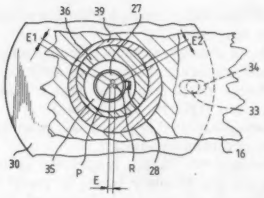
Filed Aug. 1, 1980, Ser. No. 174,448

Claims priority, application Fed. Rep. of Germany, Mar. 25, 1980, 3011368

Int. Cl.³ D05B *21/00*

U.S. Cl. 112—121.12 **7 Claims**





1. A sewing machine for producing a stitch contour in a workpiece according to a predetermined program, comprising:

stitch forming means including a needle;

a workpiece receiving device movably arranged with respect to said needle;

linkage means connected to said workpiece receiving device and having cam following means provided at said linkage means; and

a control cam with a first axis cooperating with said cam following means and drivingly connected to said stitch forming means by transmitting elements including a shaft with a second axis adjustably receiving said control cam by a control cam adjustment device having a flange and a hub arranged on said shaft and comprising setting means arranged between said control cam and said shaft for allowing a lateral adjustment of said first axis in relation to said second axis.

4,282,820

WORKPIECE-CLAMPING ASSEMBLY AT SEWING STATION

Horst Fenzl, Oerlinghausen, Fed. Rep. of Germany, assignor to Dürkoppwerke GmbH, Bielefeld, Fed. Rep. of Germany

Filed May 21, 1980, Ser. No. 152,035

Claims priority, application Fed. Rep. of Germany, Jun. 16, 1979, 2924412

Int. Cl.³ D05B *21/00*

U.S. Cl. 112—121.15 **11 Claims**

1. An assembly disposable at a sewing-machine station for positioning workpieces with respect to one another prior to stitching together at said station, comprising:

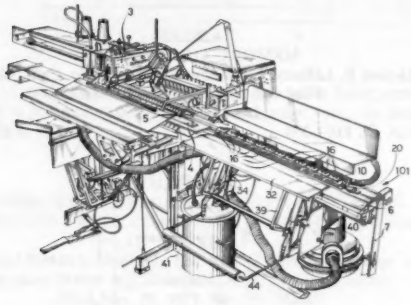
a frame;

arresting means on said frame for enabling the sequential

alignment by an operator of a first workpiece and a second workpiece;

a plurality of independently actuatable first clamps on said frame for fixing respective portions of said first workpiece with respect to said frame upon alignment of said portions via said arresting means;

a plurality of independently actuatable second clamps on said frame for fixing respective sections of said second



workpiece with respect to said frame upon alignment of said sections via said arresting means;

operator-controllable actuator means on said frame operatively connected to said clamps for selectively actuating same to effect a piecewise positioning of said first workpiece and of said second workpiece; and

transfer means on said frame for at least facilitating delivery to said station of said first workpiece and said second workpiece upon positioning and clamping thereof.

4,282,821

ELECTRONIC CONTROL SYSTEM FOR SEWING MACHINES

Kazuo Watanabe, Hachioji; Hachiro Makabe, Fussa; Toshiaki Kume, Tachikawa; Toshihide Kakinuma, Tokyo, and Hideaki Takenoya, Hachioji, all of Japan, assignors to Janome Sewing Machine Co., Ltd., Tokyo, Japan

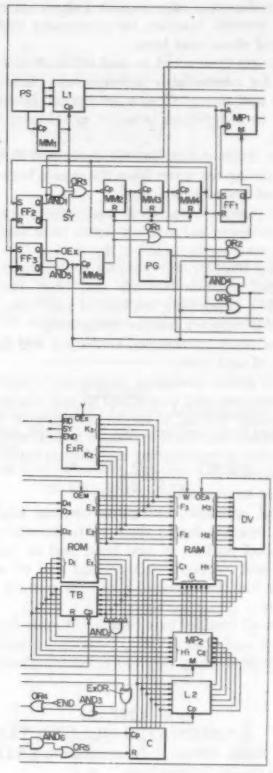
Filed Jul. 6, 1979, Ser. No. 55,306

Claims priority, application Japan, Jul. 8, 1978, 53/83245

Int. Cl.[3] **D05B** *3/02*

U.S. Cl. 112—158 E **11 Claims**

1. An electronic control system for use in sewing machines which vary needle position and fabric feed in order to stitch a plurality of stitch patterns in accordance with stitch control signals, comprising: a pulse generator issuing pulses in synchronism with rotation of the sewing machine; a first memory storing a plurality of stitch control signals; a user-operable pattern selector for selecting an initial address within the first memory; a plurality of monostable multivibrators which are connected to each other and to the pattern selector in a manner that the monostable multivibrators oscillate when the pattern selector is operated; and a second memory connected to the pulse generator, the first memory and said plurality of monostable multivibrators, the second memory operating in a manner that each time an oscillation of the monostable multivibrators takes place, a stitch control signal is read out of the first memory and temporarily stored in the second memory, and each time the pulse generator generates a pulse, a stitch control



signal temporarily stored in the second memory is read out therefrom and used to vary needle position and fabric feed.

4,282,822

BOAT HULL ANTI-FOULING SHROUD

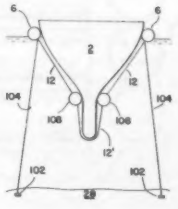
Robert Jackson, 89 Woodward Island, Clearwater, Fla.

Division of Ser. No. 883,414, Mar. 6, 1978, Pat. No. 4,215,644.

This application Jun. 6, 1980, Ser. No. 157,230

Int. Cl.[3] **B63B** *59/00*

U.S. Cl. 114—222 **1 Claim**



1. A selectively floatable protective shroud for a boat hull floating in a body of water, comprising:

an inflatable, elongated toroidal bladder with an inner open-

ing larger than the circumference of the hull of said boat at its waterline, having an inflation nozzle, located in said body of water;

a continuous, flexible, water impervious shroud having a circumferential edge mounted about the circumference of said toroidal bladder, for protecting said hull when deployed about said boat;

a gas pump connected to said inflation nozzle of said bladder, for controllably inflating said bladder to selectively float said shroud from a submerged position beneath said boat to a deployed position enveloping the hull of said boat;

a water drain nozzle mounted on said flexible shroud for evacuating sea water from the region between said flexible shroud and said boat hull;

a water pump connected to said water nozzle for controllably pumping out said sea water from said region;

a guide member mounted to the sea bed floor and connected to said bladder, for guiding said shroud from said submerged position beneath said boat into said deployed position enveloping the hull of said boat;

said guide member further comprising:

a pair of anchors mounted to the sea bed floor on opposite sides of said boat;

a pair of elastic members, respectively mounted to each of said anchors and connected to said bladder;

said bladder having its motion constrained by said anchors and elastic members to remain in substantially the vertical direction in transferring said shroud between said floating and submerged positions;

said boat having a keel portion;

a second inflatable, elongated toroidal bladder having an inner opening larger than the horizontal cross section of said keel portion of said boat, and an outer size smaller than said circumference of said hull of said boat at said water line, mounted in a central portion of said flexible shroud;

said second bladder being inflated to envelop said keel portion of said boat prior to positioning said shroud in said deployed floating position enveloping said hull.

4,282,823

UNDERWATER HULL OR TANK

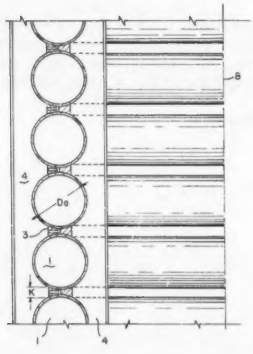
Giunio G. Santi, Milan, Italy, assignor to S.S.O.S. Sub Sea Oil Services S.p.A., Milan, Italy

Filed Jul. 30, 1979, Ser. No. 62,064

Claims priority, application Italy, Aug. 4, 1978, 26474 A/78

Int. Cl.[3] **B63G** *8/00;* **B65D** *8/10, 88/06*

U.S. Cl. 114—341 **1 Claim**



1. A structure for a hull for underwater use and which accommodates high external pressure when immersed to great depths, comprising a plurality of toric components positioned in a series about a common axis with each component being adjacent at least one other of the components, transversal connecting rings between each two adjacent toric components, said rings being shaped to engage the outer surface of each of the two toric components between which said ring is located and being fused to said two components, and inner and outer longitudinal connecting beams, said beams each having a profile to fit about the toric components and to fit against the rings between the components and being fused to said components and said rings.

4,282,824

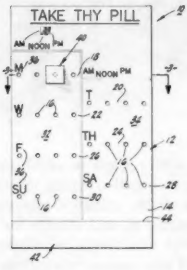
MEMORY AIDING DEVICE

Lyndon E. Lafferty, 230 Bergwall Way, Vallejo, Calif. 94590

Filed Oct. 27, 1978, Ser. No. 955,329

Int. Cl.[3] **G09F** *9/00*

U.S. Cl. 116—308 **5 Claims**



1. A device for aiding memory in the performance of an act such as the administration of a medication comprising:

a. a display board including a plurality of surfaces, including a first surface having at least a pair of substantially parallel rows of a plurality of openings being staggered from each other, a second surface having a plurality of openings, and a third surface having a plurality of openings, said display board having at least one surface thereof adapted for being visible to an observer;

b. indicia associated with each of said plurality of openings, each indicium denoting a selected time period;

c. peg means for fitting within any of said plurality of openings for supporting said peg means against the pull of gravity, said peg means comprising a shaft portion dimensioned to be removably placed in any of said openings and an indicia bearing portion including a plurality of faces, each of said plurality of faces including a different indicium able to be visible to an observer without removal of said shaft portion of said peg means from an opening.

4,282,825

SURFACE TREATMENT DEVICE

Hiroto Nagatomo, Hinode; Tetsuya Takagaki, Kodaira; Hisao Seki, Hamura; Shirou Terasaki, Kokubunjii, and Hitoshi Horimuki, Kofu, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 26, 1979, Ser. No. 61,049

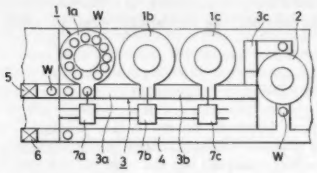
Claims priority, application Japan, Aug. 2, 1978, 53-93592; Nov. 24, 1978, 53-144169; Dec. 22, 1978, 53-157445; Dec. 25, 1978, 53-158544; Jan. 26, 1979, 54-7107

Int. Cl.[3] **B05C** *3/04, 3/10*

U.S. Cl. 118—58 **27 Claims**

1. A surface treatment device comprising at least one treatment vessel means containing a treatment liqud for treating the surfaces of plate-like articles, means for causing the treatment liquid to flow from one end portion of the treatment vessel to a second end portion of the treatment vessel, and a conveyor means for conveying the plate-like articles in said treatment liquid in a direction opposite to a flow direction of the treat-

ment liquid along a conveyor path which is nearly in parallel with main surfaces of the plate-like articles, wherein the surfaces of said plate-like articles are treated while being conveyed in the treatment liquid in the treatment ves by said conveyor means.



4,282,826

APPARATUS FOR REGULATION OF THE COATING THICKNESS IN THE COATING OF CONTINUOUS WEBS OF MATERIAL

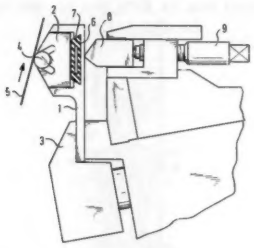
Gerhard Wohlfeil, Monheim, Fed. Rep. of Germany, assignor to Jagenberg-Werke AG, Dusseldorf, Fed. Rep. of Germany

Filed Nov. 21, 1979, Ser. No. 96,357

Claims priority, application Fed. Rep. of Germany, Nov. 24, 1978, 2851015

Int. Cl.³ B05C *11/02*

U.S. Cl. 118—118 **12 Claims**



1. In an apparatus for the regulation of the coating thickness in the coating of continuous webs of material having a doctor roll which bears on the coated side of the web and which is supported in a shape-retaining, wear-resistant doctor-roll bed and means elastically joining the doctor-roll bed to a stationary frame, the improvement wherein the elastic joining means comprises an elastically deformable mount and means removably mounting the doctor roll bed in the mount for replacement of the doctor-roll bed independent of the mount and biasing means for deforming the mount to move the doctor-roll into contact with a web.

4,282,827

DEVELOPMENT SYSTEM

Ronald A. Andrews, Pittsford, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Sep. 12, 1979, Ser. No. 74,632

Int. Cl.³ G03G *15/09*

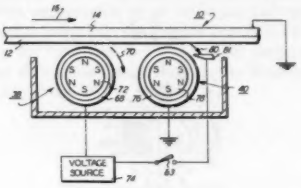
U.S. Cl. 118—648 **5 Claims**

1. An apparatus for developing an electrostatic latent image recorded on a surface region with conductive developer material, including:

electrically insulating means for transporting developer material adhering removably on the exterior surface thereof into contact with the surface region to develop the latent image recorded thereon;

an electrically conducting member spaced from and disposed closely adjacent to said insulating means and the region of the surface; and

means for electrically biasing said conducting member to generate an electrical field between said insulating means and the surface region with the electrical field vector varying from being substantially perpendicular to the surface region in the portion of the region adjacent said conducting member to being substantially non-perpendicular to the surface region in the portion of the region remote from said conducting member.



4,282,828

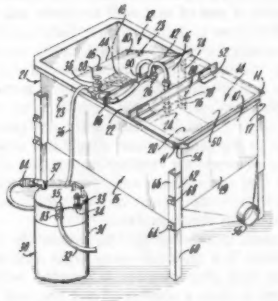
SHOWER VACCINATION APPARATUS

Keith A. Johnson, Bothell, Wash., assignor to Tavolek, Inc., Redmond, Wash.

Filed Mar. 10, 1980, Ser. No. 128,989

Int. Cl.³ A01K *63/00*

U.S. Cl. 119—3 **11 Claims**



1. An apparatus for vaccinating fish comprising:

a tank having first and second side walls, front and rear end walls and a floor;

a gate extending across said tank from said first side wall to said second side wall and separating said tank into an inlet chamber for receiving a quantity of fish to be vaccinated and a shower chamber where vaccine may be administered to the fish;

a dewatering grate disposed in said inlet chamber and defining a bottom therefor generally coextensive with said tank floor of said inlet chamber and raised thereabove to provide a space into which water which may be introduced into said inlet chamber with the fish can run off;

a floor disposed in said shower chamber extending across said shower chamber from one tank side wall to the other and extending from said grate part way to said front end wall and raised above said tank floor;

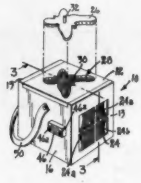
said front end wall including a discharge opening for the fish;

means for adjusting the distance between the bottom of said gate and the surface defined by said grate to control the rate at which fish pass from said inlet chamber to said shower chamber.

4,282,829
ANIMAL OBSERVATORY AND TOY APPARATUS

Dennis O. Tweed, 420-21st Ave. SW., Rochester, Mich. 55901

Filed Dec. 18, 1979, Ser. No. 104,954
Int. Cl.[3] A01K *1/02*
U.S. Cl. 119—19 27 Claims



1. Observatory cage apparatus suitably sized to be carried by a child, comprising:

(a) an enclosed observatory cage for retainably housing at least one small animal, comprising:

(i) a floor member; and

(ii) a plurality of wall members cooperatively connected with said floor member to define therewith an enclosed internal cavity;

(b) access means associated with at least one of said wall members, for enabling movement of said one wall member to permit access into said internal cavity;

(c) means for ventilating said internal cavity while preventing egress therefrom of items placed for observation within said internal cavity;

(d) a removable plug member normally operatively forming a portion of one of said wall members and being removable therefrom to define an observation port through that wall member into said internal cavity while preventing egress therethrough of items placed for observation within said internal cavity; said plug member being removable from said one wall member in an outward direction, away from said internal cavity, and generally perpendicular to the general plane of said one wall member;

(e) retention means for retainably attaching said plug member to said observatory cage when said plug member is removed from its normal wall-forming position; wherein said retention means includes:

(i) a handle member projecting outwardly from said plug member in a direction away from said internal cavity when said plug member is inserted within and positioned to form a portion of said one wall member; and

(ii) receptor means formed within a second of said plurality of wall members for retainably accepting and holding said handle, whereby said plug member becomes externally removably secured to said second of said wall members when said handle is placed within said receptor means.

4,282,830
ION DISPENSER USABLE FOR TREATING POULTRY OR ANIMAL ZONES

Donald G. Saurenman, Whittier, Calif., assignor to Consan Pacific Incorporated, Whittier, Calif.

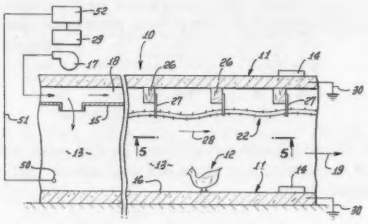
Filed Feb. 25, 1980, Ser. No. 124,242
Int. Cl.[3] A01K *31/00*
U.S. Cl. 119—21 5 Claims

1. In combination:

(a) means forming an animal or poultry confinement zone which characteristically contains air-borne particles and animals waste, producing ammonia,

(b) a flexible cable supported within said zone including a metallic core to which voltage is applicable, the cable including a protective sleeve of insulating material on and extending along and about the core, the sleeve defining a wall,

(c) a pluraiity of spaced needles having shanks penetrating through said sleeve wall and into contact with the core to make electrical contact therewith so as to receive application of said voltage, the needles having tips openly exposed outwardly of the cable on different sides thereof to dispense ions into the atmosphere near the cable,



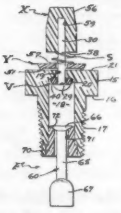
(d) means openly suspending said cable in said zone, whereby said cable is bent to conform with a desired relation within said forming means to produce sufficient ions to suppress said particles and ammonia, and

(e) means supplying sufficient voltage to said core to produce said sufficient ions.

4,282,831
BACK FLOW CHECK AND SELF-CLEANING SPRING BIASED WATERER VALVE

Norman P. Nilsen, P.O. Box 33, Phelan, Calif. 92371

Filed Nov. 13, 1978, Ser. No. 959,726
Int. Cl.[3] A01K *39/02*
U.S. Cl. 119—75 2 Claims



1. A positive shut-off and protected poultry waterer unit for dispensing water from a pressured supply into an upwardly open vessel having a side wall of substantially vertical extent for the containment of water to a level therein, and comprising: a valve body with a flat top face and a chamber therethrough and having a port opening at and normal to said top valve body face and into the vessel, a downwardly faced valve seat in said chamber surrounding the port opening therethrough, a shut-off valve with an angularly displaceable pin projecting loosely through said seat and port and said valve pin normally engaging the valve seat and operable therefrom by angular displacement of said pin to open and increase the water level in said vessel, an actuator head of relatively small horizontal extent on the upper end of the pin and exposed within the vessel to be nudged by the beaks of the poultry to angularly displace the pin, a baffle plate of relatively large horizontal extent fitted loosely over the pin and engaged with the top face of the valve body, the small head and large plate acting to encourage the settlement of silt-like particles in a direction away from the waterer unit valve body, and a compression spring acting between the baffle plate and actuator head to depress upon the former and to lift the latter for alignment of the shut-off valve pin into normal alignment and engagement with the valve seat, the poultry waterer unit further including a check valve permitting entry of water into said valve body chamber and nor-

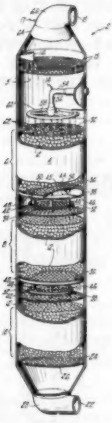
mally closing a passage opening into the water supply, said chamber entrapping a body of water between the shut-off valve and the check valve when the shut-off valve and check valve are closed to thereby isolate the water supplied into the vessel from the pressured supply thereof, said check valve comprising a poppet member operable to lift into the chamber with the water flow thereinto, the poppet member including an enlarged top head element permanently located in the chamber and adopted to normally substantially plug a chamber entrance defined in the chamber, a stem extending loosely through the chamber entrance, and a second enlarged poppet member portion having a greater extent than the chamber entrance, the distance between the head top and the second enlarged portion being less than the distance from the head top in its normal plugging position to the shut-off valve, to restrict upward poppet member motion during water flow into the chamber so as to prohibit poppet member interference with the shut-off valve.

4,282,832

PROCESS FOR VAPORIZING A LIQUID HYDROCARBON FUEL

Donald F. Szydlowski, East Hartford; Vaidotas Kuzminskas, Glastonbury, and Joseph E. Bittner, East Hartford, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Feb. 21, 1980, Ser. No. 123,226
Int. Cl.³ F22B *1/02*
U.S. Cl. 122—28 **2 Claims**



1. In a process for vaporizing a liquid hydrocarbon fuel, the steps of:

introducing the liquid fuel into a substantially vertical conduit having a plurality of regions of closely packed, high void volume, high surface area inert packing material disposed therein, said regions of packing material each having a top surface and being spaced apart vertically within the conduit, each region of packing material being supported by a foraminous material extending across the conduit, wherein said liquid fuel is distributed substantially uniformly over the top surface of the uppermost region of packing material and passes down through the conduit over the packing material within each region coating the surfaces of the packing material with a film of liquid;

redistributing, over the top surface of each region of packing material following the uppermost region, all unvaporized liquid fuel passing through the immediately preceeding region;

vaporizing the said liquid fuel by (1) introducing an inert hot gas into the conduit above the top surface of the uppermost region simultaneously with the said step of introducing liquid fuel into the conduit, the hot gas having sufficient sensible heat to vaporize all the liquid fuel, and (2) passing the hot gas down through the conduit over the packing material in said regions, the number of regions and volume of packing material being selected to assure complete vaporization of all the liquid fuel sprayed into the conduit using only the sensible heat of the hot gas; and

removing the vaporized fuel and hot gas mixture from the conduit after it has passed through the lowermost region of packing material

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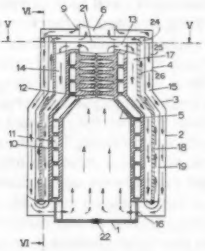
4,282,833

HOT-WATER BOILER, FOR INSTANCE A CENTRAL HEATING BOILER, AND A METAL CASTING THEREFOR

Gerardus J. Giesen, Tegelen, Netherlands, assignor to Metaalgieterij G. Giesen, B.V., Tegelen, Netherlands

Filed May 23, 1979, Ser. No. 41,793
Claims priority, application Netherlands, May 23, 1979, 7805539
Int. Cl.³ F22B *7/00*
U.S. Cl. 122—158 **10 Claims**



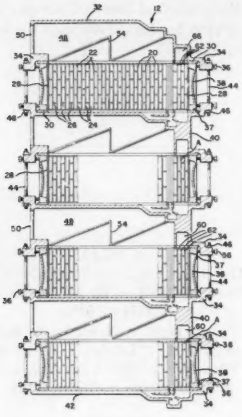
1. In a hot water boiler having a double-wall structure containing passages for flow of the water being heated and providing bounding walls on at least two opposite sides of a combustion chamber, there being outside said double-wall structure a plurality of further walls providing passages for flow of combustion air and combustion gases, whereby the combustion gases exchange heat with the water and the air for combustion, and the said double-wall structure having vertically extending first projections on its outside face which project into a passage for combustion gas, the improvement that the said double-wall structure is comprised of opposed hollow metal castings which provide opposed bounding walls of a combustion gas outlet passage extending upwardly from the said combustion chamber and have second projections extending into said outlet passage extending upwardly from the combustion chamber, there being outside each of the castings three walls providing in sequence in the outward direction firstly a first passage for downward flow of the combustion gases from the said outlet passage over the surfaces of said first projections on the outside of the casting, secondly a second passage interconnected with said first passage for upward flow of the combustion gases from the lower end of said first passage and thirdly a passage for downward flow of combustion air which is connected into the bottom of the combustion chamber.

4,282,834

BOILER STRUCTURE EMBODYING A PLURALITY OF HEAT EXCHANGE UNITS

J. Hilbert Anderson, York, Pa., assignor to Sea Solar Power, York, Pa.

Filed Jul. 19, 1979, Ser. No. 59,031
Int. Cl.³ F28F *1/00, 3/10*
U.S. Cl. 122—367 C **7 Claims**



1. A boiler structure comprising a plurality of heat exchange units arranged as a horizontal bank of units with a plurality of said banks of units arranged in tier formation, each heat exchanger unit having a plurality of plates arranged in pairs in vertical planes and in spaced parallel relation to one another, each pair of plates defining a passageway therebetween and each pair of plates defining a passage between adjacent pairs of plates, a top cover member for each unit with certain of said top cover members constituting bottom cover members for a superjacent unit, said cover members defining compartments with which said passageways communicate, for delivering a vapor thereto, a vapor exhaust manifold, conduits connecting each of said compartments to said manifold, each of said top cover members having an eliminator screen provided therein to remove liquid droplets from the vapor moving through the compartments to the exhaust manifold.

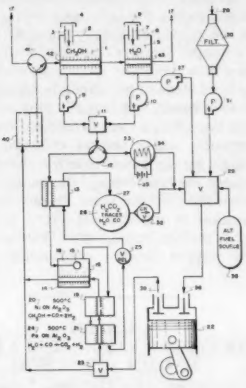
4,282,835

INTERNAL COMBUSTION ENGINE WITH GAS SYNTHESIZER

William D. Peterson, Salt Lake City, Utah, and John M. Lytle, Richland, Wash., assignors to Wm. D. Peterson & Associates, Salt Lake City, Utah

Filed Jul. 2, 1979, Ser. No. 53,750
Int. Cl.³ B01J *7/00;* **F01N** *3/15;* **F02B** *43/08;* **B01J** *8/02*
U.S. Cl. 123—1 A **1 Claim**

1. In combination, an internal combustion engine, a source of fuel comprising a mixture of Methonol and water, for supply to a pair of synthesizers serially connected and accepting exhaust gas from said engine, the first of said synthesizers first receiving exhaust gases containing a catalyst of iron on Al_2O_3 and the second one of said synthesizers containing a catalyst of Nickel on Al_2O_3, a first heat exchanger accepting engine exhaust gases discharged from said second synthesizer and arranged to accept said fuel mixture; means for conducting said fuel mixture from said first heat exchanger to said synthesizers to pass sequentially through said second and first synthesizers thence to said engine for combustion therein; and a second heat exchanger located between said internal combustion engine and the discharge from said first synthesizer for the passage therethrough of gas discharged from said synthesizers prior to supply to said engine, and means conducting said fuel mixture



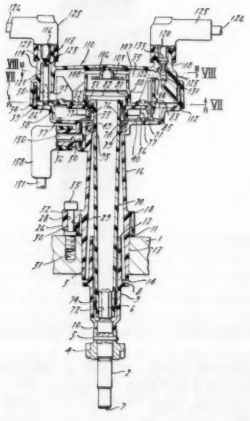
through said second heat exchanger prior to the supply of said mixture to said first heat exchanger.

4,282,836

LIGHTWEIGHT DISTRIBUTOR ROTOR DRIVESHAFT

David H. Fox, Ann Arbor, and Charles C. Kostan, Canton, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Dec. 14, 1979, Ser. No. 103,677
Int. Cl.³ F02P *7/02*
U.S. Cl. 123—146.5 A **8 Claims**



1. An internal combustion engine ignition distributor connected to be driven by said engine and containing a rotor driveshaft, a rotor element and a fixed metallic ring element having an outside circular surface, said rotor driveshaft includes:

a first end containing means for engagement with a drive member of said engine;

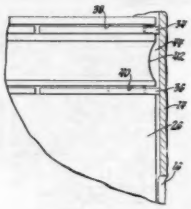
a second end containing means for mounting said rotor element thereon and said rotor mounting means contains an integral inwardly facing circular surface having a diameter slightly larger than said fixed metallic ring element surface, located in opposition to said metallic surface to thereby form a rotational bearing therebetween.

4,282,837

TWO-CYCLE DIESEL ENGINE WITH PISTON RING STABILIZING ACCUMULATOR VOLUME

Robert L. Holtman, and Robert B. McClure, both of Indianapolis, Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Sep. 5, 1979, Ser. No. 72,580
Int. Cl.[3] F02F 7/00
U.S. Cl. 123—193 P 2 Claims



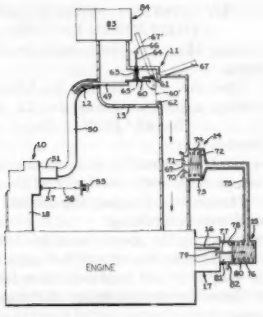
1. The combination in a two-stroke cycle diesel engine of the type having a piston with at least two axially spaced split metal compression sealing rings retained in grooves near one end of the piston, the piston being reciprocable within a ported cylinder to alternately cover the ports for retention of cylinder pressure at said one piston end during compression and expansion strokes and uncover the ports for scavenging and recharging of the cylinder during a portion of the piston motion at the low pressure end of said strokes, wherein the improvement comprises an accumulator volume defined by the piston between the two rings closest to said one end of the piston, said volume being sized large enough in relation to the piston ring leakage area, engine cylinder pressures and normal operating speeds to limit the build-up of gas pressure in the volume between the rings to a value below that of the cylinder pressure during nearly all conditions of normal engine operation, whereby shock loading of the end ring through cyclic unseating due to differential pressure reversals is substantially avoided.

4,282,838

ENGINE OVERSPEED SHUT-DOWN SYSTEM

Harold C. Davidson, Chillicothe, and John H. Parks, Peoria, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US/79/00128, § 371 Date Mar. 2, 1979, § 102(e) Date Mar. 2, 1979, PCT Pub. No. WO80/01821, PCT Pub. Date Sep. 4, 1980
This PCT application filed Mar. 2, 1979, Ser. No. 81,218
Int. Cl.[3] F02B 77/08
U.S. Cl. 123—198 DB 28 Claims



1. An overspeed shut-off system in combination with an internal combustion engine having an intake manifold (13) connected thereto for communicating ambient air to said engine and fuel control means (17) for supplying combustible fuel to said engine, said shut-off system comprising,

first valve means (11) for opening or closing said manifold (13) to selectively communicate ambient air therethrough,

second valve means (14) for movement between a closed position and an open position communicating a vacuum from said intake manifold therethrough in response to closing of said first valve means,

vacuum actuating means (15) for actuating said fuel control means (17) to shut-off the supply of fuel from said fuel control means (17) to said engine in response to opening of said second valve means (14), and communication of a vacuum from said intake manifold (13) to said vacuum actuating means (15), and

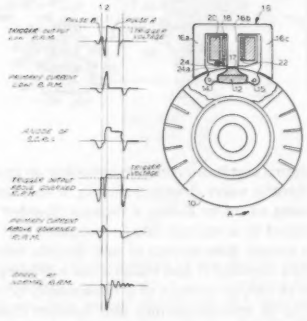
overspeed control means (10) responsive to the speed of said engine for automatically closing said first valve means (11) when such speed exceeds a predetermined maximum.

4,282,839

BREAKERLESS MAGNETO IGNITION SYSTEM

Richard D. Newberry, Springfield, and Elwin J. Brayley, East Longmeadow, both of Mass., assignors to Eltra Corporation, Toledo, Ohio

Filed Apr. 20, 1978, Ser. No. 898,279
Int. Cl.[3] F02D 3/08
U.S. Cl. 123—335 12 Claims



1. A breakerless magneto ignition system for an internal combustion engine wherein a flywheel containing a magnet assembly is rotated synchronously with the engine operation for the purpose of inducing a current in a primary coil and the current is switched OFF at a particular time in the engine cycle for the generation of an ignition spark on a secondary coil that is magnetically coupled to said primary coil, said breakerless magneto ignition system comprising:

a primary winding;

a secondary winding that is magnetically coupled to said primary winding;

a solid state switch for controlling the primary winding current flow;

first means for driving said switch into conduction in response to said rotating magnet assembly for turning the primary current ON at a first selected time;

second means for driving said switch into nonconduction in response to said rotating magnet assembly for turning the primary current OFF at a second selected time during the engine cycle, said means driving the current OFF at a third selected time in response to the magnet assembly rotating at a predetermined rate;

said second means including a trigger coil adapted to produce first and second pulses in response to the flywheel movement;

said first pulse rendering said solid state switch nonconductive when said engine is operated below said predetermined rate;

said second pulse rendering said switch nonconductive at and above said predetermined rate and occurring at a time in the engine cycle at which there is insufficient primary winding current flow through said switch to generate an ignition spark;

said pulses being in substantially constant phase relationship with each other.

4,282,840

INTERNAL COMBUSTION ENGINE WITH ALTITUDE COMPENSATION DEVICE

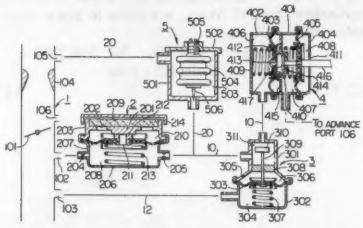
Kenji Yamada, Aichi; Akira Takata; Akira Ii, both of Toyota, and Katsuhiko Ohiwa, Handa, all of Japan, assignors to Nippondenso Co., Ltd., Kariya and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, both of, Japan

Filed Feb. 21, 1980, Ser. No. 123,424

Claims priority, application Japan, Feb. 22, 1979, 54-20004; Apr. 28, 1979, 54-57127[U]

Int. Cl.³ F02P *5/04*

U.S. Cl. 123—412 **9 Claims**



1. An internal combustion engine including an intake system having a throttle valve disposed therein, a vacuum-operated ignition timing advancer having a vacuum chamber pneumatically connected by a vacuum line to a vacuum port formed in said intake system downstream of said throttle valve, a pressure regulator disposed in said vacuum line and being operative to produce an output vacuum of a substantially constant vacuum level to be introduced into said vacuum chamber, and means continuously responsive to variation in the atmospheric pressure to continuously control the pressure level in said vacuum chamber such that the ignition timing is advanced as the atmospheric pressure is reduced.

4,282,841

IGNITION TIMING CONTROL SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

Yasuo Takagi; Michio Onoda; Masaaki Katsumata, all of Yokohama, and Kenji Yoneda, Fujisawa, all of Japan, assignors to Nissan Motor Company, Limited, Japan

Filed Apr. 30, 1979, Ser. No. 34,286

Claims priority, application Japan, Jun. 27, 1978, 53-77858; Jun. 27, 1978, 53-77859

Int. Cl.³ F02P *5/04*

U.S. Cl. 123—425 **16 Claims**

1. An ignition timing control system for an internal combustion engine, comprising:

(a) first means for producing a function of respective intensities of combustion knock in each cylinder of said engine;

(b) second means for respectively storing said function corresponding to each cylinder in a sequence; and

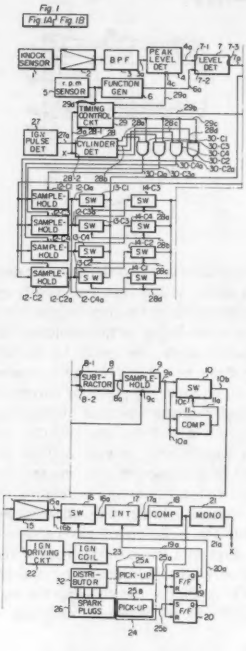
(c) third means for determining respective ignition timings of each cylinder in accordance with the respectively stored functions by modifying the basic ignition timing determined by an advance mechanism,

wherein said first means comprises:

a knock sensor for producing an output signal indicative of the intensity of an impact of combustion knock in the cylinders of said engine,

a band-pass filter responsive to said output signal of said knock sensor for transmitting only frequencies of combustion knock,

a peak level detector for producing an output representing the peak level of the intensity of combustion knock in said cylinder,



means for generating a reference signal which is variable in accordance with the engine rotational speed,

a level detector for comparing said output signal of said peak level detector with said reference signal, and

a subtractor for subtracting said level detector signal from the function stored by said second means to produce said function of respective intensities of combustion knock in each cylinder of said engine.

4,282,842

FUEL SUPPLY CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINE

Takao Sasayama, Hitachi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 12, 1978, Ser. No. 924,006

Claims priority, application Japan, Jul. 22, 1977, 52/87426

Int. Cl.³ F02D *5/00*

U.S. Cl. 123—440 **10 Claims**

1. In a fuel control system for an internal combustion engine having an integrating controller and real time feedback producing a correction by changing the air-fuel ratio at a time when it is optimum comprising:

means for detecting the condition of load on said engine;

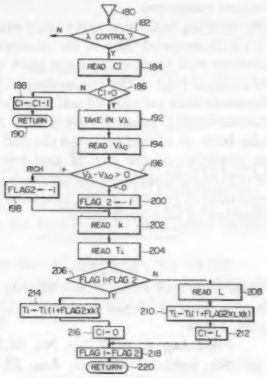
means for determining the rate of fuel supply in accordance with the output of said load condition detecting means;

means for detecting the condition of the exhaust gas from said engine;

means for correcting said rate of fuel supply to produce said rate in accordance with the output of said exhaust gas condition detecting means; and

means for supplying fuel at said corrected rate of fuel supply; an improvement which comprises:

means for comparing the output of said exhaust gas condition detecting means with a predetermined signal corresponding to an output which would be produced from said exhaust gas condition detecting means if the fuel supply were optimum with respect to the air supply to the engine to produce an output signal when the comparison indicates that the coincidence between the output of said exhaust gas condition detecting means and said predetermined signal has occurred;



means responsive to the output of said comparing means to determine the past condition of fuel supply to the engine which existed at the beginning of a dead time before the occurrence of the output of said comparing means, said dead time being substantially equal to a period of time from the time when fuel is supplied to the engine to the time when the supplied fuel affects the output of said exhaust gas condition detecting means and determined as a function of the condition of load on the engine at the beginning of said dead time, and

means for correcting the rate of fuel supply to the engine according to said past condition of fuel supply.

4,282,843

LIQUID FUEL INJECTION PUMP

Alec H. Seilly, North Wembley, and Dorian F. Mowbray, Burnham, both of England, assignors to Lucas Industries Limited, Birmingham, England

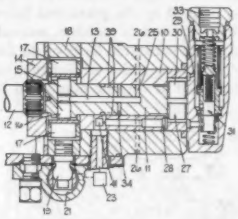
Filed Mar. 15, 1979, Ser. No. 20,621

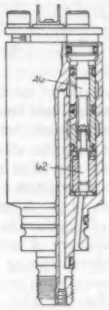
Claims priority, application United Kingdom, Mar. 22, 1978, 11313/78

Int. Cl.³ F04B *3/00*; F02D *1/00*

U.S. Cl. 123—450 **18 Claims**

1. A liquid fuel injection pumping apparatus for supplying fuel to an internal combustion engine and comprising a housing, a rotary distributor member mounted within the housing and which in use is driven in timed relationship with the associated engine, an injection pump also driven in use, in timed relationship with the engine, the injection pump including a pump chamber, the apparatus further including a delivery passage formed in the distributor member and communicating with the pump chamber, an outlet port formed in the housing and with which the delivery passage registers during an injection stroke of the injection pump, a feed port formed in the housing and a feed passage in the distributor member communicating with the pump chamber, said feed port and feed passage being brought into registration in the interval between injection strokes of the injection pump, a feed pump for supplying liquid fuel at a low pressure, a shuttle movable in a cylinder, said shuttle and said cylinder being sized to accommodate a predetermined volume of fuel on either end of said shuttle, said predetermined volume of fuel being greater than the volume of fuel required during operation of said injection pump, control means for controlling the flow of fuel to one end of said cylinder while the other end of said cylinder is in communication with said feed port, fuel being supplied from each end of the cylinder in turn to the injection pump, the rate of movement of said shuttle towards said other end of the cylinder being reduced as the feed passage moves out of register with





the feed port and the movement of the shuttle ceasing as the feed port and feed passage move out of register and prior to said shuttle reaching an end of said cylinder, measuring means for measuring the displacement of the shuttle which takes place while fuel is flowing from said other end of the cylinder and signal processing means responsive to the signal produced by the said measuring means for adjusting said control means in the event that the quantity of fuel supplied to the injection pump differs from the desired quantity of fuel.

4,282,844

FUEL PUMPING APPARATUS

Robert T. J. Skinner, High Wycombe, England, assignor to Lucas Industries Limited, Birmingham, England

Filed Jan. 9, 1980, Ser. No. 110,682

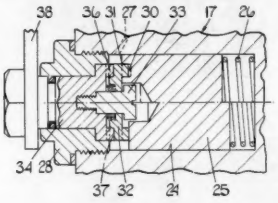
Claims priority, application United Kingdom, Feb. 17, 1979, 5660/79

Int. Cl.³ F02D *1/06*

U.S. Cl. 123—502 **4 Claims**

1. A fuel pumping apparatus for supplying fuel to a compression ignition engine and of the kind comprising an injection pump operable in use, in timed relationship with the associated engine to deliver fuel at predetermined time intervals, the injection pump including a component the position of which can be altered to adjust the timing relationship between the injection pump and the engine, an engine speed responsive member operably connected to said component and which with increasing engine speed moves said component in a direction to advance the timing of delivery of fuel by the injection pump, fuel control means for controlling the amount of fuel delivered by the injection pump and lever means associated

with said fuel control means and operable to increase the amount of fuel delivered by the injection pump for the purpose of obtaining satisfactory idling of the engine when the engine is cold, a first member positioned adjacent said speed responsive member, a second member positioned adjacent said first member, means coupling said second member to said lever means whereby when said lever means is moved in a direction to increase the delivery of fuel for cold idling purposes, said second member will be moved in a plane normal to the direction of movement of said speed responsive member, first tang and slot elements defined by the presented faces of the speed responsive member and the first member, second tang and slot elements defined by the presented faces of the first and second members, one of said tang and slot elements having the slot wider than the tang and of varying depth and resilient means



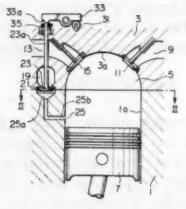
acting between the one pair of members defining the aforesaid one tang and slot elements, said resilient means acting to urge the members in a direction such that the tang is disposed at the shallower end of the slot, the arrangement being such that when said lever means is moved to increase the delivery of fuel the aforesaid one pair of members move relative to each other so that the tang moves to the deeper end of the slot thereby allowing the one pair of members to move closer to each other so that the timing of delivery of fuel is retarded, and when the engine starts the members defining the other of said tang and slot elements move away from each other to disengage the other tang and slot elements while the one pair of members move relative to each other under the action of the resilient means thereby providing advance of the timing of delivery of fuel for cold idling of the engine.

4,282,845

INTERNAL COMBUSTION ENGINE WITH EXHAUST GAS ACCUMULATION CHAMBER

Hidetaka Nohira, Mishima; Sumio Ito, Susono, and Hisashi Oki, Numazu, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Mar. 21, 1979, Ser. No. 22,490
Int. Cl.³ F02M *25/06*
U.S. Cl. 123—568 **6 Claims**



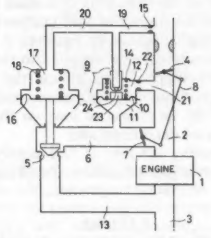
1. An internal combustion engine which includes:
a cylinder block which has a cylinder bore formed therein and a piston sealingly inserted in said bore, said piston being connected to a rotatable crankshaft for reciprocation in the cylinder;
a cylinder head which has a recess formed therein containing an intake valve for controlling the introduction of intake air into the cylinder and an exhaust valve for controlling the discharge of burnt gases from the cylinder and which is secured to said cylinder block so that a combustion chamber is formed by said cylinder bore, said recess and the top of said piston;
an exhaust gas accumulation chamber formed adjacent to said combustion chamber and having an entrance;
a third valve which is disposed at the entrance of said exhaust gas accumulation chamber; and
a communicating passage for communicating said third valve with said combustion chamber, wherein the improvement comprises:
means for opening said third valve once each engine cycle at a first predetermined time in the compression stroke and for shutting said third valve once each cycle at a second predetermined time in the succeeding expansion stroke, in synchronism with rotation of said crankshaft, and wherein
said communicating passage opens into a surface of said cylinder bore, at a level between the top and bottom dead center positions of the top of said piston wherein said piston acts to open and shut the entrance to said accumulation chamber at predetermined times between the opening and shutting of said third valve.

4,282,846

EXHAUST GAS RECIRCULATING DEVICE

Mikio Minoura, Nagoya, Japan, assignor to Aisan Industry Co., Ltd., Aichi, Japan

Filed Aug. 6, 1979, Ser. No. 64,261
Claims priority, application Japan, Aug. 23, 1978, 53-102606
Int. Cl.³ F02M *25/06*
U.S. Cl. 123—568 **10 Claims**



1. An exhaust gas recirculating device of an engine communicating with a suction manifold and having an exhaust pipe and having a carburetor and an exhaust gas recirculating passage leading from the exhaust pipe, comprising:
a throttle valve mounted in the carburetor,
two valves comprising an exhaust gas recirculating EGR valve and a variable throttle valve, both of said two valves being disposed in the exhaust gas recirculating passage leading from the exhaust pipe of the engine, said exhaust gas recirculating passage leads to downstream of the throttle valve in the carburetor,
said carburetor includes a carburetor flange,
an insulator,
a variable throttle valve body is secured said carburetor flange together with said insulator,
a regulator means for being actuated by negative pressure downstream of the throttle valve of the carburetor for operating said EGR valve,
said carburetor forms an air horn defining a suction air passage,
said regulator means being formed integrally with said air horn of said carburetor, said air horn is formed with a bore forming a small air passage connecting said regulator means with said suction air passage of the air horn;
link means interconnecting said throttle valve and said vari-

able throttle valve for keeping constant the ratio of the opening area between said throttle valve and said variable throttle valve and for controling the pressure difference between front and rear sides of the variable throttle valve to reduce Nox; and

said carburetor flange being formed with a groove on an underside of the carburetor flange,

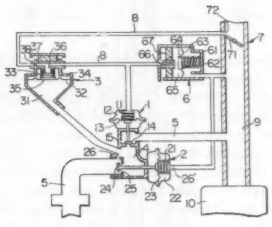
a plate interposed between said carburetor flange and the suction manifold, said groove and said plate both cooperatively forming a portion of the exhaust gas recirculating passage and an exhaust gas delivery port opening into the suction manifold.

4,282,847

EXHAUST GAS RECIRCULATION SYSTEM FOR INTERNAL COMBUSTION ENGINE

Yasuhiro Ikuta, and Masashi Matsuo, both of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Sep. 11, 1979, Ser. No. 74,765
Claims priority, application Japan, Jul. 31, 1979, 54-98491
Int. Cl.³ F02B *47/08*
U.S. Cl. 123—568 **2 Claims**



1. In an exhaust gas recirculation system for an internal combustion engine having an intake manifold, a throttle valve therein, an exhaust gas recirculation passage communicating with said manifold downstream of said throttle valve, a constant pressure chamber disposed in an intermediate portion of said passage, a first vacuum-actuated flow-rate control valve in said passage downstream of said chamber, a second vacuum-actuated flow-rate control valve in said passage upstream of said chamber for changing the cross-sectional area of said passage, first conduit means communicating the vacuum in said manifold downstream of said throttle valve to said second control valve for actuating the same, second conduit means for communicating the vacuum in said manifold immediately upstream of said throttle valve when closed to said first control valve for actuating the same, a restriction in said second conduit means, and a pressure regulating valve in said second conduit means between said restriction and said first control valve for regulating the vacuum applied thereto in accordance with the exhaust gas pressure in said passage upstream of said first control valve, the improvement comprising:

a vacuum-actuated atmospheric pressure introduction valve communicating with said second conduit means between said pressure regulating valve and said first control valve for introducing atmospheric pressure into said second conduit means; and

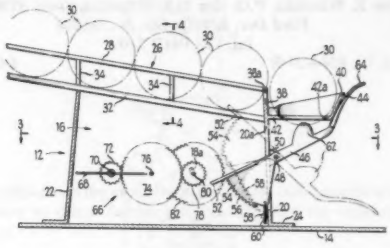
third conduit means communicating the vacuum in said manifold downstream of said throttle valve with said atmospheric pressure introduction valve for actuating the same.

4,282,848

BATTING PRACTICE APPARATUS

Ralph J. Kulesza, Chicago; Burton C. Meyer, Downers Grove, and Donald F. Nix, Hanover Park, all of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Dec. 21, 1979, Ser. No. 106,283
Int. Cl.³ F41B *7/00*
U.S. Cl. 124—16 **17 Claims**



1. Batting practice apparatus for projecting a ball upwardly into the air to be hit by a bat, comprising:

trough means for holding a plurality of balls to move in sequence toward a feed position against a stop at a lower end;

holding means adjacent said stop for supporting a single ball in a ready position to be projected upwardly into the air;

feed means for sequentially moving a ball in said feed position adjacent said stop from said trough means into said ready position in said holding means,

motor means for forcefully propelling said ball in said ready position upwardly of said holding means into the air; and

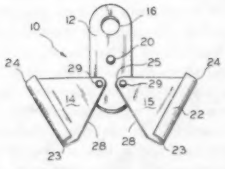
an arm pivotal upwardly from a first position spaced below said ball in said ready position toward a second position for striking said ball in said ready position to propel the same upwardly, said arm pivotal about an axis and including a feed portion to one side of said axis moveable from said second position spaced below the ball in said feed position towards said first position engaging said ball in said feed position to lift the same over said stop into said ready position, said arm also including a striker portion on the other side of said axis for striking said ball in said ready position to propel the same upwardly.

4,282,849

BOW AND ARROW HOLDER

Dwayne A. Russ, 220 Grace St., Schofield, Wis. 54476

Filed Jan. 21, 1980, Ser. No. 113,549
Int. Cl.³ F41B *5/00*
U.S. Cl. 124—23 R **10 Claims**



1. A holder comprising a first support plate member and a pair of generally triangular holder element means for pivoting to a bow string and arrow receiving position, each of said element means having a first corner and a first opposed edge, said first corner of each element being pivotably secured to a first side of said plate member and said first opposed edges being curled upwardly from the plane of said holder elements

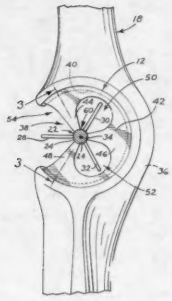
for receiving a bow string and a locked end of an arrow, said holder elements being arranged on said plate member whereby second edges of said holder elements are adjacent to a parallel to one another when said elements are in a first closed position to receive a bow string and an arrow.

4,282,850

ARCHERY BOW WITH ARROW GUIDE APPARATUS

Allen E. Warnicke, P.O. Box 513, Willamina, Oreg. 97396

Filed Dec. 3, 1979, Ser. No. 99,274
Int. Cl.³ F41B *5/00*
U.S. Cl. 124—24 R **4 Claims**



1. In a bow including a handle section bounded by front and rear sides,

means in said handle section defining a channel having an axis extending transversely of the handle section and extending from the front and back and the belly sides of the handle section,

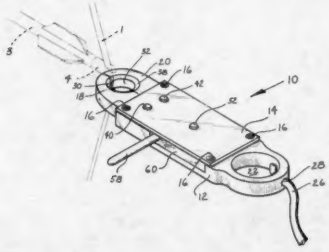
and means forming an arrow guide in said channel comprising plural, angularly spaced fins, all of a one-piece flexible sheet material, occupying substantially a common plane which plane is disposed substantially normal to the axis of said channel, said fins being mounted on said handle section and projecting radially inwardly from the sides of said channel and terminating at inner ends which are out of contact with each other and which are positioned and arranged to define an opening adapted for the embracing of an arrow shaft, adjacent fins defining an opening therebetween adapted to accommodate the passage of an arrow vane therethrough.

4,282,851

ARCHERY BOWSTRING RELEASE DEVICE

Leon W. Lyons, 1122 Dewitt Ave., Niles, Mich. 49120

Filed Aug. 1, 1979, Ser. No. 62,701
Int. Cl.³ F41B *5/00*
U.S. Cl. 124—35 A **4 Claims**



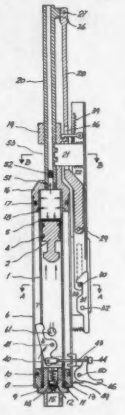
1. An archery bowstring release device comprising a housing, jaws pivoted intermediate their ends to said housing and having projecting ends with confronting string-receiving notches, spring means normally separating the projecting ends of said jaws, said jaws being shiftable between a string retaining position and a string releasing position, each of said jaws including an elongated leg within the housing, and manually shiftable means pivotably carried by said housing and having a cam projection positionable between and engageable with said jaw legs for retaining said jaws in their string retaining position during bowstring drawing and aiming, said cam projection being so constructed as to coact with said jaw legs under the biassing action of said spring means to permit pivoting of said shiftable means out of retaining engagement with said legs when the user releases manual pressure on said shiftable means.

4,282,852

AIR RIFLE WITH PISTON IMPELLED BY COMPRESSED GAS

Julio A. Omana, Coronel Bogado 2480, Boulogne, San Isidro, Buenos Aires, Argentina

Filed Jun. 13, 1979, Ser. No. 47,990
Int. Cl.³ F41B *11/00*; **F41F** *1/04*
U.S. Cl. 124—67 **10 Claims**



1. A compressed air rifle comprising means defining a cylinder containing a freely slidable piston that divides the interior of the cylinder into a rear chamber adapted to be charged with a compressed gas and a forward chamber defining an air compression chamber, a piston latch in said rear chamber and a trigger operably connected thereto for controlling said latch, means including a unidirectional valve for charging said rear chamber with compressed gas, a member mounted on the forward end of said cylinder having a rifle barrel guide and a projectile insertion opening, an open-ended rifle barrel coaxial with said cylinder slidably mounted in said guide for movement between a first loading position wherein it may receive in its forward open end a projectile inserted through said insertion opening in said member, a second position wherein it has been thrust into said cylinder sufficiently to push said piston into locking engagement with said trigger controlled latch, and a third firing position wherein it closes said insertion opening in said member and its rear open end is substantially at the forward end of said compression chamber whereby when said trigger is actuated to release the piston the piston is impelled by said compressed gas in the rear chamber to move forwardly in said cylinder to compress air in said compression chamber to drive the projectile through said barrel.

4,282,853

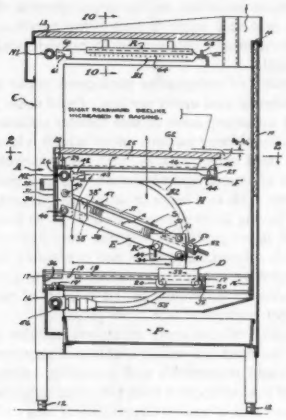
WEIGHT COMPENSATOR FOR ADJUSTABLE BROILER OVEN

Howard R. Reynolds, 1551 21st St., Manhattan Beach, Calif. 90266

Continuation-in-part of Ser. No. 749,316, Dec. 10, 1976, Pat. No. 4,144,870. This application Sep. 15, 1978, Ser. No. 942,637

Int. Cl.³ A21B *1/00*; A47J *37/00*

U.S. Cl. 126—19 R **8 Claims**



1. An adjustable broiler stove including, a cabinet of panels forming an oven chamber, radiant heat means disposed horizontally within the top of the oven chamber, a food supporting griddle moveable within the oven chamber, elevator means comprising upper and lower arms swinging from a pair of vertically spaced supporting pivots carried by the cabinet and extending to a bracket having a pair of vertically spaced pivots carrying the griddle, the said arm and pivot structure forming a substantially quadralteral configuration having a dynamic center of effort as the arms are moved, and weight compensator means comprising a tension spring extending over the said center of effort and from the bracket end of and in the plane of the upper arm and to an anchor between the vertically spaced supporting pivots thereby to have a reciprocal increase and decrease in spring pressure applied to the dynamic center of effort so that lifting action is nominally the same, and means to position the said griddle in the oven chamber and in spaced relation to said radiant heat means.

4,282,854

CHARCOAL LIGHTER

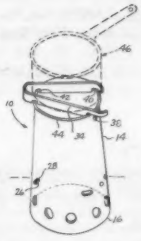
Garner B. Byars, Corinth, Miss., assignor to Auto Fire Corporation, Corinth, Miss.

Filed May 25, 1979, Ser. No. 42,910

Int. Cl.³ F24B *3/00*

U.S. Cl. 126—25 B **12 Claims**

1. A charcoal starter comprising a tubular housing of substantial height having an upper rim and a lower rim and adapted to rest vertically with its lower rim disposed on a subjacent supporting surface, a grate pivoted in the housing, depending leg means fixedly secured to the grate and having a lower edge by lying in the plane of said lower rim of the housing when the grate is substantially horizontal, said leg depending below said lower rim when the housing is lifted above the supporting surface, and handle means attached to an upper portion of said housing, said handle means comprising means for removably attaching said handle means to said housing and means for seating said handle means on the upper rim of said housing for supporting a pot or pan, whereby said handle means may be grasped to lower the housing onto said supporting surface causing the lower edge of said leg means to engage the supporting surface and automatically turn the grate to its horizontal position ready to receive charcoal for igniting, and subsequent grasping and lifting of said handle means automatically causes the grate, by gravity to tilt downwardly about its pivot to dump the ignited charcoal onto the supporting surface.



4,282,855

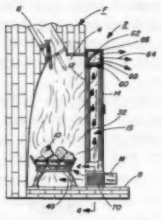
FIREPLACE SCREEN SYSTEM

Charles Perry, 6166 Parkwood Rd., Mentor, Ohio 44060

Filed May 24, 1979, Ser. No. 42,127

Int. Cl.³ F24J *3/02*

U.S. Cl. 126—121 **4 Claims**



1. In a forced air fireplace screen system comprising, at least one panel section adapted to be mounted on a fireplace opening including a pair of neatly parallel and laterally spaced oppositely disposed tempered glass panels, said tempered glass panels being connected together by oppositely disposed side frames to define a chamber for permitting heat extraction by means of forced air therebetween, baffle means disposed at the top of said section for directing heated air upwardly and outwardly from between said glass panels, inlet and manifold means disposed adjacent the bottom of said section for the delivery of external ambient air between said glass panels, and electric blower motor means adjacent said inlet and manifold means communicating with the chamber defined by said glass panels for forcing ambient air upwardly through said chamber and outwardly through said baffle means, said manifold means being an elongated box-like construction defined by oppositely disposed side and end walls defining a generally rectangular configuration in side elevation, one of said end walls including a vent member defining said inlet means, one of said side walls containing, (the innermost wall of said manifold), a plurality of laterally spaced apertures, a slide bar operably connected to said side wall including said selectively adjustable control means for reciprocating said slide bar in relation to said apertures for selectively opening and closing said apertures for controlling the minimum amount of combustion air delivered into the fireplace for proper combustion with the remaining greater volume of air delivered into said chamber so as to confine and control the heat of radiation created by the fireplace.

4,282,856
SOLAR-ENERGY COLLECTOR

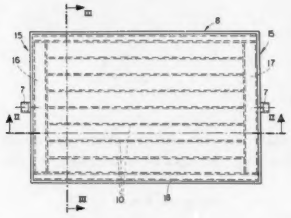
Otto Stehl, Essen-Bredeney, and Hans Spakowski, Gelsenkirchen, both of Fed. Rep. of Germany, assignors to BFG Glassgroup, Paris, France

Filed Aug. 2, 1978, Ser. No. 930,173

Claims priority, application Fed. Rep. of Germany, Aug. 2, 1977, 2734709

Int. Cl.³ F24J *3/02*

U.S. Cl. 126—417 **12 Claims**



1. A solar-energy collector comprising:

a double-pane insulating unit having a first pane with first and second surfaces transparent to solar energy and with said first surface turned toward the sun and a second pane turned away from the sun, said panes defining between them a flow chamber for a fluid adapted to pick up heat from incident sunlight;

a cover pane spaced from said first pane and defining a gas-containing dead-air space therewith;

inlet and outlet fittings connected to said flow chamber for admitting said fluid to and discharging said fluid from said flow chamber;

an emission-limiting coating on said first surface of said first pane adjoining said dead-air space; and

heat-transfer-promoting means in said flow chamber between said first and second panes.

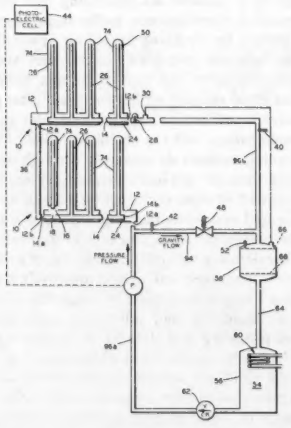
4,282,857
SOLAR ENERGY COLLECTOR ASSEMBLY

Yu K. Pei, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Mar. 6, 1980, Ser. No. 127,705

Int. Cl.³ F24J *3/02*

U.S. Cl. 126—422 **9 Claims**



1. In a solar energy collector apparatus, a manifold assembly interconnecting a plurality of tubular solar energy collectors with each other, in parallel, to form a bank of collectors, said manifold assembly further interconnecting a plurality of banks of collectors with each other, in series, to form a tiered arrangement, said manifold assembly comprising:

(a) a plurality of enclosed outer jackets, each jacket having inlet and outlet openings for transfering a fluid therethrough in one direction under pressure and in an opposite direction under gravity, said outer jackets having a plurality of spaced apart holes of a suitable diameter to receive said tubular collectors on the upper portion of said outer jackets, and said outer jackets being positioned substantially horizontally and spaced to provide said tiered arrangement;

(b) a plurality of receptacles positioned about said spaced apart holes on said upper portion of said outer jackets, for sealably mounting each of said tubular collectors;

(c) a plurality of inner jackets, one of which is located within each of said outer jackets, said inner jackets having a plurality of spaced apart holes on its upper portion and in alignment with said holes in said outer jackets, said inner jackets having at least one drain hole on its lower portion, and said inner jacket having one enclosed end and one open end, wherein said open end is sealably fixed to said outlet opening in said outer jacket to form a union;

(d) a plurality of grommets seated in each of said holes on said upper portion of said inner jackets;

(e) a plurality of upwardly extending tubular projections having one open end seated within said grommets, passing through said receptacles and extending substantially the length of said collectors with the other open end adjacent the closed end of said collector when said collectors are sealably mounted on said receptacles;

(f) a plurality of connective tubing, each of which has one end connected to said union and has the other end connected to an inlet opening in another of said outer jackets, so that said banks of collectors are in open communication; and

(g) air trap means proximal to said outlet opening of said last outer jacket in said tiered arrangement, to prevent a siphoning effect when said pressure is removed, so that said fluid remains intact in said manifold assembly until released upon command;

whereby as fluid is introduced under pressure into one of said openings in the first outer jacket in said tiered arrangement, said fluid is accommodated for circulation under pressure in one direction through said tubular collectors, in parallel, and through said banks of collectors in series, and said fluid is further accommodated for draining, under gravity, in a reverse direction, upon said command.

4,282,858
SOLAR ENERGY SYSTEM AND METHOD

Richard S. Bowers, Jr., Lebanon, Pa., assignor to Bowers Industries, Inc., Cleona, Pa.

Filed Mar. 27, 1980, Ser. No. 134,467

Int. Cl.³ F24J *3/02*

U.S. Cl. 126—425 **8 Claims**

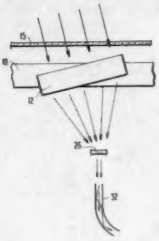
1. A solar energy heating system comprising:

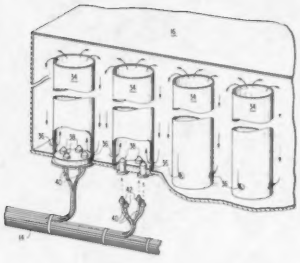
a plurality of solar collectors each adapted for orientation toward the sun and each including a lens element for focusing sunlight;

a fluid storage tank including a plurality of heat transfer tubes, at least the lower end of said tubes being of a heat conductor substance, being open at the upper end to permit the egress of relatively heated fluid therefrom, being closed at the lower end, and being apertured adjacent the lower end to permit the entrance of relatively cooled fluid into the tube adjacent the closed end; and

fiber optic means for connecting each of said solar collectors to the closed end of one of said heat transfer tubes, said means including means at one end for positioning said one end to receive sunlight focused by one of said plurality of

solar collectors and means at the other end for positioning said other end to direct sunlight against the closed end of





one of said plurality of heat transfer tubes and thereby heat fluid within said storage tank.

4,282,859

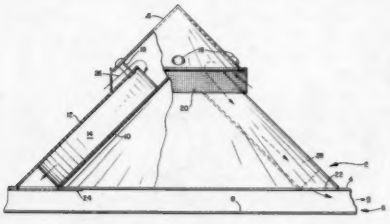
SOLAR HEATER

Norman G. Hayward, 11720 Moffitt La., Manasses, Va. 22110

Filed Nov. 27, 1979, Ser. No. 97,684

Int. Cl.³ F24J *3/02*

U.S. Cl. 126—428 **4 Claims**



1. A solar heater for air, comprising: a chamber,

first means providing a first downwardly-enlarged generally conical surface disposed above the chamber,

second means providing a second downwardly-enlarged generally conical surface spaced outwardly from the first generally conical surface,

said first and second means providing a space between said surfaces which is substantially open at the top and bottom, the open top of said space being open to the atmosphere and providing an air inlet thereto,

port means for connecting of the bottom of said space to said chamber, and

means for drawing air through said air inlet into said space between said surface and thence through said port means into said chamber.

4,282,860

HOT AIR TYPE SOLAR HEAT-COLLECTING APPARATUS

Hisao Koizumi, Zushi; Yoshinosuke Kawada, and Koichi Matsui, both of Yokohama, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

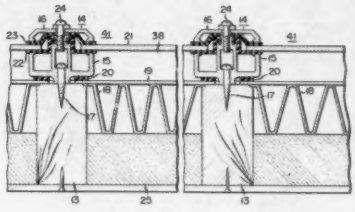
Continuation of Ser. No. 863,037, Dec. 21, 1977, abandoned.

This application Nov. 29, 1979, Ser. No. 98,593

Claims priority, application Japan, Dec. 23, 1976, 51-154263

Int. Cl.³ F24J *3/02*

U.S. Cl. 126—429 **9 Claims**



1. A hot air type solar heat-collecting apparatus for heating a room comprising:

a transparent plate permeable to sunlight;

a transparent plastic film which spatially faces the plate and is permeable to sunlight passing through the plate;

an air-sealing layer spatially facing the opposite side of the transparent film to the transparent plate;

a heat-collecting plate disposed between the transparent film and air-sealing layer in parallel relationship therewith, contacted with the transparent film and air-sealing layer and crosswise corrugated with a large number of ridges and furrows to absorb the heat of the sunlight passing through the transparent film, the transparent plastic film being continuously supported by the heat-collecting plate, which is supported on the air-sealing layer;

a first group of air passages being defined by one side of the corrugated heat-collecting plate and the transparent film;

a second group of air passages being defined by the other side of said corrugated heat-collecting plate and air-sealing layer;

means for circulating air through both groups of air passages in the lengthwise direction of the heat-collecting plate, thereby heating circulating air by the heat delivered from the heat-collecting plate, and

said means for circulating including a blower for pulling heated air from the air passages for forwarding it into said room such that said transparent plastic film can be continuously supported by the heat-collecting plate.

4,282,861

WATER HEATING SYSTEM USING SOLAR ENERGY

Charles F. Roark, 24 Maple Ln., Brownsburg, Ind. 46112

Continuation of Ser. No. 810,888, Jun. 28, 1977, abandoned.

This application May 3, 1979, Ser. No. 35,464

Int. Cl.³ F24J *3/02;* **F28F** *3/12*

U.S. Cl. 126—435 **3 Claims**

1. A water heating system which comprises:

a water storage tank;

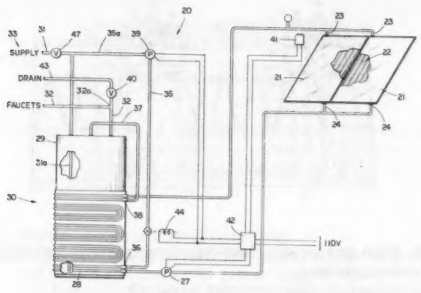
a heat exchanger jacket having at least two separate fluid passageways extending therethrough in double serpentine tube-in-sheet configuraton therein, said jacket being oriented around the exterior surface of said water storage tank;

means for connecting one of said separate fluid passageways in a flow communication arrangement with the water storage space in said water storage tank;

said connecting means comprising a pump and piping connected to said one of said plurality of said separate fluid

passageways and cooperating with said storage tank to establish a water heating loop for circulation of water from within said water storage tank through said jacket and back into said water storage tank;

said jacket being removably attached to said water storage tank and said tank being part of a conventional hot water heater assembly having an outer housing, insulation inside said housing and surrounding said jacket, and a heating device associated with said tank for heating stored water in the tank independent of any medium in the other of said fluid passageways in said jacket, and said assembly;



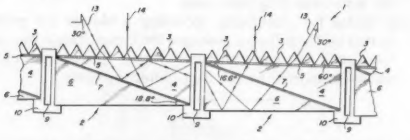
said system further comprising three pipes which pass through said housing from the outside of said housing and are connected to said tank inside said housing, a first one of said pipes connecting the inlet of said pump to said water storage tank, a second one of said pipes connected to one end of said one passageway of said heat exchanger jacket and extending outside said housing and then back into said housing to its connection to said water storage tank, a third one of said pipes arranged to provide hot water from said water storage tank to a point of use.

4,282,862

THIN-LINE COLLECTORS

Bertrand S. Soleau, 4203 Kincaid Ct., Chantilly, Va. 22021

Filed Nov. 9, 1979, Ser. No. 93,035
Int. Cl.[3] **F24J** *3/02*
U.S. Cl. 126—439 **7 Claims**



1. A solar collector comprising:

at least one glass module, said glass module comprising a plurality of glass wedges having a high index of refraction, a first triangular shaped piece of glass having a high index of refraction cemented to said wedges and a second piece of triangular shaped glass having a high index of refraction cemented to said first piece of triangular shaped glass, said first and second triangular shaped pieces of glass being so arranged as to form a generally rectangular shape with said plurality of wedge shaped pieces of glass protruding from the top surface of said generally rectangular shape; and

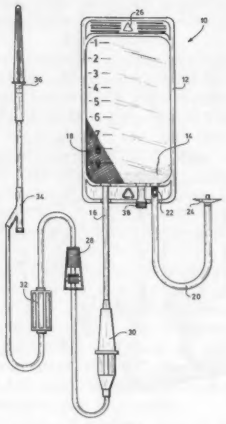
means for converting solar energy incident on said glass module to a different form of energy, said means for converting solar energy incident on said glass module to a different form of energy being secured around the outside surface of said glass module.

4,282,863

METHODS OF PREPARING AND USING INTRAVENOUS NUTRIENT COMPOSITIONS

Myron A. Beigler, Two Palo Alto Sq., Palo Alto, Calif. 94304, and Amin J. Khoury, 29 Tubwreck Dr., Dover, Mass. 02030

Filed Jul. 20, 1978, Ser. No. 926,399
Int. Cl.[3] **A61B** *19/00;* **A61M** *5/00;* **A61J** *1/00*
U.S. Cl. 128—1 R **20 Claims**



11. A dry-packaged article of manufacture for the containment and intravenous administration of a sterile, pyrogen-free, particulate-free nutrient composition to a mammal, which comprises;

a hermetically sealed, moisture-proof microorganism-impermeable, ionizing ray permeable container adapted to contain the composition in dry form and aqueous mixture;

a nutrient composition in a solid form having a moisture content which is not more than about 30 percent by weight of the solid form, provided that when the nutrient is an amino acid or carbohydrate, the moisture content does not exceed about 15 percent by weight and when the nutrient is a vitamin the moisture content does not exceed about 10 percent by weight, said form being readily dissolved in water at a temperature of circa 185° F. to form an aqueous solution which will pass through a 5 micron filter by gravity at a rate of at least 1 liter per hour and the filtrate will pass through a 0.22 micron filter by gravity at a rate of at least 1 liter per 2 hours, disposed within said container;

means for introducing into the container sterile, pyrogen-free water in a proportion sufficient to form an intravenous mixture of the water and said nutrient composition in the container, connected to the container;

means connected to the container, for administering the intravenous mixture to a mammal;

filter means associated with the means for administering, adapted to remove particulate matter from the intravenous mixture; and

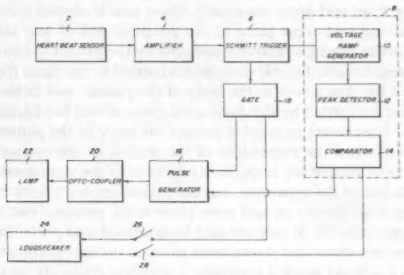
a bacteria-impermeable covering hermetically enclosing the container and the connected and associated means;

said enclosed container and means being sterile and the nutrient composition being sterile and pyrogen-free, sterility being achieved by ionizing ray.

4,282,864
METHOD AND APPARATUS FOR INDUCING A PRE-HYPNOTIC STATE

Robert S. Pizer, 4007 Connecticut Ave. N. W., Washington, D.C. 20008

Filed May 12, 1980, Ser. No. 148,785
Int. Cl.³ A61N *1/34*
U.S. Cl. 128—1 C **14 Claims**



1. A device for inducing a pre-hypnotic state in an individual, comprising

(a) means for producing a first pulse signal the pulses of which correspond with the heartbeat of the individual;

(b) interpolation means connected with said first signal producing means for producing a second pulse signal the pulses of which occur midway in time between successive pairs of said first heartbeat pulses, respectively, said interpolation means including

(1) voltage ramp generator means responsive to said first pulse signal for producing a linear voltage ramp output the peaks of which are in synchronization with the pulses of said first signal, respectively, the amplitude of said voltage peaks corresponding with the heartbeat rate of the individual;

(2) peak detector means for sensing the peaks of said voltage ramp output; and

(3) comparator means connected with said peak detector means for sensing the mid-point of said voltage ramp output between successive peaks, thereby to produce said second signal; and

(c) stimulus means having a pair of inputs connected with said first signal producing means and with said interpolation means, respectively, for producing a pulsed physical stimulus in response to said first and second signals, said pulsed stimulus having a frequency of twice the heartbeat rate of the individual, whereby a state of profound relaxation is induced when the pulsed stimulus is applied to the individual, and further whereby the individual's mind is receptive to suggestion.

4,282,865
APPARATUS FOR EXERCISING A LIMB OF A PATIENT

William F. Pogue, P.O. Box 749, DeQueen, Ark. 71832

Filed Aug. 13, 1979, Ser. No. 66,223
Int. Cl.³ A61H *1/02*
U.S. Cl. 128—25 R **18 Claims**

1. Apparatus for reciprocating and oscillating a limb of a user comprising:

a housing means;

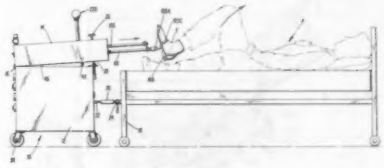
movable means on said housing means for engaging a limb of a user;

means for connecting said movable means to the limb to prevent relative movement therebetween;

motor means on said housing means for simultaneously reciprocating and oscillating said movable means to reciprocate and oscillate the user's limb;

adjustment means for varying the extent of the stroke of reciprocation and the stroke of oscillation of said movable means;

said movable means comprising a reciprocating rod of a reciprocating motor, said motor means for oscillating said rod including a rotary motor, and means operably interconnecting said rotary motor to said rod to oscillate the rod as the latter is reciprocating; and

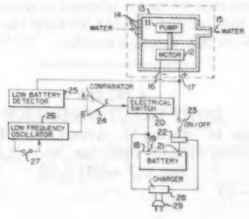


said reciprocating motor comprising a cylinder, and a double acting fluid actuated piston within said cylinder, said piston being connected to said rod; said interconnecting means comprising a sleeve mounted to said cylinder, a shaft slidably disposed in said sleeve, means connecting an outer end of said shaft to said rod, and a link connecting an output shaft of said rotary motor with said cylinder to oscillate the latter.

4,282,866
BATTERY OPERATED PORTABLE HYDROMASSAGE APPLIANCE

Donald C. Miffitt, Chelmsford, Mass., assignor to The Gillette Company, Boston, Mass.

Filed Jun. 12, 1979, Ser. No. 47,851
Int. Cl.³ A61H *9/00*
U.S. Cl. 128—66 **9 Claims**



7. A hydromassage appliance comprising a housing including an inlet and an outlet;

a water pump positioned in said housing for drawing water from said inlet and expelling water from said outlet;

DC motor means positioned in said housing and mechanically connected to said water pump for driving said water pump in response to an electrical signal;

a rechargeable DC source positioned in said housing and electrically connectable to said motor means for providing the electrical signal;

low battery detector means positioned in said housing for sensing the voltage level of said DC source and for electrically disconnecting said motor means from said DC source when a predetermined voltage level of said DC source is sensed; and

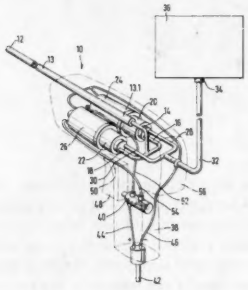
electrical low frequency oscillator means electrically connected to said motor means for providing a pulsed input electrical signal to said motor means which switches said motor means on and off at a rate of about five hertz whereby a pulsed water output is created.

4,282,867

CLEANING FLUID INJECTION DEVICE

Rudolph M. Du Toit, Paarl, South Africa, assignor to Christopher Edward; Hans Rudolf Kabutz and Frank Corker, all of, South Africa

Filed Dec. 5, 1979, Ser. No. 100,518
Int. Cl.[3] A61H *9/00*
U.S. Cl. 128—66 **3 Claims**



1. A portable medical treatment device for irrigating the human ear canal comprising:

(a) a cylindrical tube having a cleansing fluid passage and being dimensioned to enter an aural passage of a human body;

(b) an injection nozzle provided at one end of the tube and constituting an outlet from the fluid passage;

(c) at least two pumps connected in parallel, each having a suction side connection to a cleansing fluid reservoir and a delivery side for connection to the passage;

(d) at least a pair of electrical motors adapted to each drive a respective one of the pumps for pumping cleansing fluid under pressure from the reservoir to the nozzle via the cleansing fluid passage; and

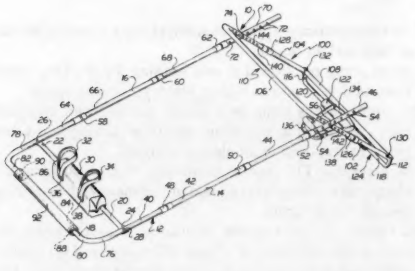
(e) electrical control means adapted to sequentially energize one or both of the motors to vary the cleansing fluid output from the injection nozzle.

4,282,868

BODY TRACTION DEVICE

Dean D. Riggs, 147 Burton St., Avon Lake, Ohio 44012

Filed Feb. 15, 1980, Ser. No. 121,905
Int. Cl.[3] A61H *1/02*
U.S. Cl. 128—75 **11 Claims**



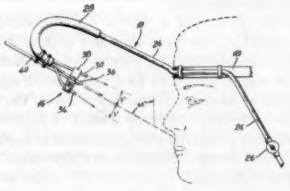
1. A patient operated traction apparatus for the application of tension to the body of a patient comprising a generally U-shaped frame member having a distal foot portion extending between longitudinally extending side members each terminating in a proximal end and defining said U-shape, and a generally rectangular head member having opposed side elements and opposed cross pieces defining said rectangular shape having a proximal end and a distal end, means for adjustably pivotally securing the proximal ends of said longitudinally extending side members to the opposed side elements, respectively of said rectangular head member at a point intermediate the cross pieces thereof, the location of such pivot means being spaced from the cross piece located at the proximal end of said head member, whereby the portions of the side elements between the pivot means and the cross piece joining such portions at the proximal end of the head member provide parallel levers projecting from said pivot outwardly above said U-shaped frame and having said cross piece at the proximal end of said side elements and being selectively operable by the patient to apply or release tension, flexible strap means carried by the distal foot portion for attachment to the body of the patient, and flexible strap means carried by the distal cross piece of said head member for attachment to another part of the body of the patient, whereby when the extremities of the section of the patient's body to be treated are respectively secured to the strap means at each end of the apparatus, and the patient applies a force by pulling downwardly on said cross piece at the proximal end of said head member to activate said levers about said pivot, the lever action about said pivots tends to move the foot portion to which one body portion extremity is attached relatively away from the cross piece to which the other body portion extremity is attached thereby subjecting the body portion intermediate said strap means to tension.

4,282,869

APPARATUS FOR OXYGEN TREATMENT

Arnold Zidulka, Cote St. Luc, Canada, assignor to Montreal General Hospital Research Inst., Montreal, Canada

Filed Jun. 22, 1979, Ser. No. 51,014
Claims priority, application Canada, Jul. 21, 1979, 307887
Int. Cl.[3] A61M *15/00*
U.S. Cl. 128—200.28 **11 Claims**

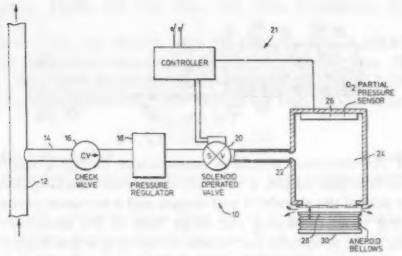


1. An apparatus for supplying a predetermined concentration of oxygen to the nose and mouth of a person's head, including adjustable support means adapted to be removably fixed to the person's head, nozzle head means, including at least one jet nozzle, and mounted to said support means such that the jet nozzle is directed towards the nose and mouth of a person's head, supply means supported on the support means for supplying the oxygen under pressure to the nozzle head means, means for adjusting the nozzle head means such that the axis of the jet nozzle passes through the breathing ingress area formed by the nose and mouth of the person, flow rate means associated with said supply means for controlling the flow of oxygen from the nozzle head means to form a volume of a predetermined concentration of oxygen at the breathing ingress area of the person, and said nozzle head means being spaced from the support means such that ready unimpeded access to the nose and mouth area is obtained.

4,282,870
BREATHING MIXTURE CONTROLLER

Joseph G. A. Porlier, Downsview, Canada, assignor to Her Majesty the Queen in right of Canada, as represented by the Minister of National Defence, Ottawa, Canada

Filed Jul. 11, 1979, Ser. No. 56,731
Int. Cl.³ A62B *7/00*
U.S. Cl. 128—203.14 **4 Claims**



1. In an aircraft breathing system including an oxygen generator of the type used in pilot life support systems to draw gases from engine bleed air and to provide oxygen to the pilot and which generates oxygen/nitrogen mixture when overloaded, a device to cause an excess demand on the oxygen generator at lower altitudes so that a variable oxygen/nitrogen breathing mixture is drawn from the generator, and at higher altitudes a higher oxygen concentration breathing mixture is drawn from the generator, the device comprising:

inlet means for receiving a portion of breathing mixture from the life support system in parallel to the pilot's demand on the system;

means defining a chamber having substantially cabin pressure therein for receiving said portion;

an oxygen partial pressure sensor contained in the chamber means to sense the partial pressure of oxygen in the breathing mixture;

a valve positioned between the inlet and the chamber means and operable to change the rate of flow of breathing mixture to said chamber;

control means coupled to the sensor and to the valve, the control means controlling the valve dependent on the sensed partial pressure of the oxygen so that if the partial pressure deviates from a predetermined pressure the valve is moved to adjust the rate of flow of said portion until the predetermined partial pressure is sensed by said partial pressure sensor so that at lower altitudes as the flow rate increases, an excess demand is created on the generator and a lower oxygen concentration breathing mixture is produced; and

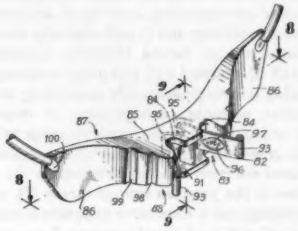
means sensitive to cabin pressure to prevent flow of said portion at higher altitudes when the cabin pressure is above a predetermined limit so that the device is then inoperative and the pilot receives a suitable higher oxygen concentration breathing mixture from the generator.

4,282,871
NASO-GASTRIC TUBE STABILIZER

Ingram S. Chodorow, Upper Saddle River, N.J., and Richard Hall, New Canaan, Conn., assignors to Technalytics Inc., Upper Saddle River, N.J.

Filed Jan. 8, 1979, Ser. No. 1,757
Int. Cl.³ A61M *25/02, 15/08*
U.S. Cl. 128—207.18 **30 Claims**

1. A device for engaging and stabilizing an exposed section of a naso-gastric tube extending out of a patient's nostril generally along the axis thereof, the device comprising (a) a base with a central part having a front portion, a rear portion positionable adjacent the patient's upper lip, top and bottom portions, and opposite end parts, (b) first means on said central part of the base for releasably engaging and holding said exposed section of the tube, and (c) second means separate and independent of said first means for releasably securing said device to the patient's head, said first means comprising (i) a first surface on said front portion which is accessible from the front for receiving and generally aligning said tube section

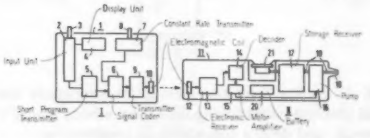


with the axis of the nostril when the base is adjacent the patient's upper lip, and (ii) spring means permanently secured to said base and having a gripping second surface, said spring means operable alternatively to engage and resiliently urge said tube section against said first surface and to release and allow said tube section to move axially relative to the base and to move laterally away from said base.

4,282,872
DEVICE FOR THE PRE-PROGRAMMABLE INFUSION OF LIQUIDS

Manfred Franetzki, Uttenreuth; Klaus Gagneur, Bubenreuth, and Karl Prestele, Erlangen, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Dec. 13, 1978, Ser. No. 969,189
Claims priority, application Fed. Rep. of Germany, Dec. 28, 1977, 2758467
Int. Cl.³ A61M *37/00*
U.S. Cl. 128—213 R **9 Claims**



1. Apparatus for the pre-programmable infusion of liquids into a patient's body, comprising

a microdosing unit having supply means for supplying the liquid at a controllable infusion rate in response to programming signals,

a control device operable for supplying selected programming signals to said microdosing unit for correspondingly controlling the rate of supply of the liquid thereby,

said control device having program storage means (**5**) for storing at least one predeterminable control program (**31–40**), which provides for the generation of respective different programmed sequences of infusion amounts as a function of time, each of the respective different programmed sequences of infusion amounts as a function of time providing for the delivery of a respective different total liquid amount by said supply means over a relatively short time span of not more than three hours, with the different total liquid amounts lying within a predetermined available range of amounts suitable for selection by the patient,

said program storage means (**5**) being controllable by each of

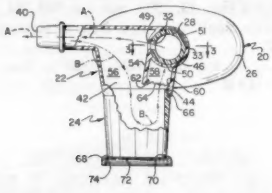
a respective series of manually generated selection signals each representing a respective different one of said total liquid amounts to be infused within said available range of amounts and beginning at a given starting point, to generate the respective corresponding one of said programmed sequences of infusion amounts as a function of time over the relatively short time span thereof in accordance with said one control program stored therein, such that the respective corresponding total liquid amount is supplied by said microdosing unit in said relatively short time span, said control device having manually actuatable control means (3, 23) coupled with said program storage means (5) and being selectively manually actuable by the patient to respective positions corresponding to respective total liquid amounts within said available range of amounts to supply respective ones of said series of said manually generated selection signals and to supply the given starting time to the program storage means (5), whereby the microdosing unit is responsive to patient manual selection of one of said total liquid amounts from said available range of amounts and a desired starting point based on actual real time patient need while supplying such patient-selected total amount over a relatively short time span and at a rate as a function of time which can be pre-programmed by the patient's physician according to the characteristics of the individual patient.

4,282,873

MEDICAL IRRIGATION DEVICE

Robert A. Roth, 29 Hyslop Rd., Brookline, Mass. 02146

Filed Apr. 3, 1980, Ser. No. 136,890
Int. Cl.³ A61M *1/00*
U.S. Cl. 128—276 **5 Claims**



1. A medical irrigation device for alternately introducing fluid into and withdrawing fluid from a body cavity through a cannula, said device comprising in combination:

a fluid receptive manually operable syringe;

a specimen collecting receptacle;

a fluid conductive manifold including a fluid conductive first arm segment, and a bifurcated fluid conductive second arm segment connected substantially orthogonally thereto, said first arm segment including means for providing connection to and establishing open communication with said cannula, and said second arm segment including means for providing connection to and establishing open communication with said specimen collecting receptacle; said second arm segment comprising a first fluid conduit and a second fluid conduit, said first fluid conduit being between and in open communication with said first arm segment and said specimen collecting receptacle and said second fluid conduit communicating with said specimen collecting receptacle through a particulate filter means; and

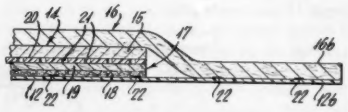
a manually operable valve means for controllably establishing open communication alternatively between said syringe and said first arm segment and between said syringe and said second fluid conduit.

4,282,874

DISPOSABLE ABSORBENT ARTICLE OF MANUFACTURE

Frederick K. Mesek, Tinley Park, Ill., assignor to Johnson & Johnson Baby Products Company, New Brunswick, N.J.

Filed May 11, 1979, Ser. No. 38,370
Int. Cl.³ A41B *13/02*
U.S. Cl. 128—287 **14 Claims**



1. An absorbent article of manufacture having a multilayer absorbent pad means, a moisture-impervious backing sheet on one side of the absorbent pad means, and a moisture-permeable facing sheet overlying the other side of the absorbent pad means, the absorbent pad means comprising a first highly-porous, loosely-compacted cellulosic fibrous batt having on one side the facing sheet and on the other side a moisture-impervious film having a plurality of openings therein for permitting fluid to pass therethrough, and on the other side of the moisture-impervious film between the film and backing sheet a second batt of greater density than the first batt to provide a wickability gradient for drawing fluid through the openings in the moisture-impervious film and retaining the fluid in the second batt.

4,282,875

OCCLUSIVE DEVICE

Fedor A. Serbinenko, Kutuzovsky prospekt, 33, kv. 43, and Sergei I. Kljuchnikov, Volgogradsky prospekt, 164, korpus 2, kv. 111, both of Moscow, U.S.S.R.

Filed Jan. 24, 1979, Ser. No. 6,037
Int. Cl.³ A61M *25/00*
U.S. Cl. 128—325 **9 Claims**

1. An occlusive device for use in plugging blood vessels of the brain, comprising:

an elastic catheter having a distal tip with an opening therethrough, said distal tip having a thin walled elastic bulb releasably mounted thereon, said bulb having a thick spherical head portion accommodating a metal plug which provides means to dampen vibrations caused by the flow of blood, and a thick spherical tail portion containing a self-closing aperture surrounding and housing said distal tip of said catheter, wherein said aperture functions as a valve which closes upon removal of the distal tip of said catheter from the elastic bulb; said distal tip of the catheter having connecting or coupling enlargement means thereon which extends through the tail portion and which internally secures the tip within the bulb cavity said enlargement means adapted to prevent detachment of the tip from the bulb by the flow of blood; and wherein the opening in the distal tip of the catheter is relatively smaller

in diameter and has a greater elasticity than the main body of the catheter.

4,282,876

RADIOPAQUE POLYURETHANE RESIN COMPOSITIONS

Vincent J. Flynn, 130 New Rd., Apt. D10, Parsippany, N.J. 07054

Division of Ser. No. 40,278, May 18, 1979, Pat. No. 4,250,072, which is a continuation-in-part of Ser. No. 862,773, Dec. 21, 1977, abandoned, which is a continuation of Ser. No. 712,189, Aug. 6, 1976, abandoned. This application Dec. 28, 1979, Ser. No. 108,392

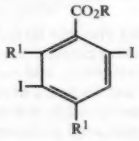
Int. Cl.³ A61M *25/00*

U.S. Cl. 128—349 R **9 Claims**

1. A medical-surgical catheter formed from tubing comprising

(a) a resin which includes from 100 to 33 parts by weight of a thermoplastic polyurethane and from 0 to 67 parts of a polymer of a halogenated vinyl monomer; and

(b) a radiopacifier therefor consisting of a diiodobenzoate or a tetraiodobenzoate compound of the formula



wherein R^1 is hydrogen or iodo, and R is alkyl or alkoxyalkyl or a mixture of said compounds, said radiopacifier (b) comprising 10 to 40 parts by weight per 100 parts by weight of (a) and (b).

4,282,877

HAIR REMOVING ARRANGEMENT

Larry Mathews, New York, N.Y., assignor to Alleghany Pharmacal, New York, N.Y.

Filed Feb. 26, 1979, Ser. No. 15,221

Int. Cl.³ A61B *17/00*

U.S. Cl. 128—355 **4 Claims**

1. Arrangement for removal of unwanted hair, comprising a plastic sheet material of predetermined shape and size having a pressure sensitive adhesive composition comprising a high molecular weight polymer selected from the group consisting of polymers of natural rubber, butyl rubber, butadiene styrene, block styrene, ethylene vinyl acetate, vinyl acetate, ethyl cellulose and natural waxes in an amount of about 9–10% by weight, a tackifier selected from the group consisting of terpenes, rosin derivatives, coumarone indene, hydrocarbon resins and terpene phenolics in an amount of about 65–68.5% by weight, a softener selected from the group consisting of mineral oil, liquid rosin derivatives, lanolin dibutyl phthalate, dioctyl phthalate and tricresyl phosphate in an amount of about 21.5–25% by weight, and an antioxidant selected from the group consisting of 2,2-methylene-bis(4-methyl-6-tertiary butyl)-phenol, 1,3,5-triethyl-2,4,6-tris-(3,5-ditertiary butyl-4-hydroxy benzyl)-benzene, butylated hydroxy anisole and butylated hydroxy toluol in an amount of about 0.5% by weight applied to a face thereof, said composition adhering firmly to hair but not to skin so that when the same is applied to an area of the body from which it is desired to remove unwanted hair, and subsequently peeled away therefrom, only the unwanted hair is removed.

4,282,878

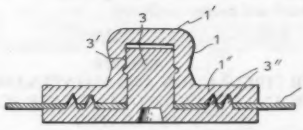
ELECTRODE STRUCTURE FOR ELECTROCARDIOGRAPH AND RELATED PHYSIOLOGICAL MEASUREMENTS AND THE LIKE

Peter P. Novello, North Andover, Mass., assignor to Vaughn Corporation, Salisbury, Mass.

Filed Aug. 17, 1979, Ser. No. 67,342

Int. Cl.³ A61B *5/04*

U.S. Cl. 128—641 **6 Claims**



1. An electrode structure for electrocardiograph and related physiological measurements and the like having, in combination, cooperative thin plastic stud and eyelet members, each plated with the same highly conductive surface, said members having a mated interface and cooperative flange surfaces extending from said interface, means for securing an electrolytic gel to the conductive surface of the eyelet and means for inhibiting leakage of the gel into said interface between the members, said leakage inhibiting means including cooperative sealing ring and groove means in the respective flange surfaces of said members for providing positive swaged lock-sealing therebetween.

4,282,879

ULTRASONIC DIAGNOSING APPARATUS

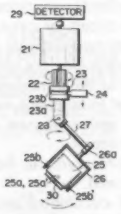
Yutaka Kunii; Toshikuni Shimoji, and Masaaki Tsutsumi, all of Kawasaki, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Feb. 22, 1979, Ser. No. 13,975

Claims priority, application Japan, Feb. 23, 1978, 53/20271

Int. Cl.³ A61B *5/00*

U.S. Cl. 128—660 **11 Claims**



1. An apparatus for oscillating an ultrasonic probe of an ultrasonic sector scanner through a variable sector angle to sector scan a subject to be examined comprising:

a holder for supporting the ultrasonic probe,

means pivotably mounting said holder about a first fixed axis to sector scan the probe about said first fixed axis,

a support member pivotably fixed to said holder about a second axis substantially perpendicular to said first fixed axis, thereby forming in effect a universal joint,

a connecting rod,

a spherical bearing joining one end of said connecting rod to said support member at a point on said support member spaced from said first fixed axis,

an adjustment mechanism rotatable about a third fixed axis

and pivotably fixed to the end of said connecting rod at a pivot point opposite said spherical bearing, said adjustment mechanism being slidable along said third fixed axis to vary the distance between said pivot point and said first fixed axis, whereby the probe will oscillate through a sector angle as the adjustment mechanism rotates and whereby the sector angle traveled by the probe is a function of the distance between said first fixed axis and said pivot point, and

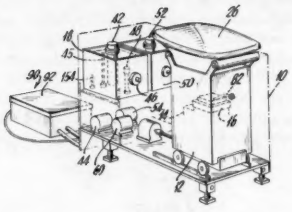
means for sliding said adjustment mechanism along said third fixed axis to thereby adjust the sector angle through which said holder oscillates.

4,282,880

WATER CIRCULATION AND MAINTENANCE SYSTEM FOR AN ULTRASOUND MAMMARY SCANNING APPARATUS

Bayard G. Gardineer, Skillman; James A. Heringes, Dayton, and Paul Mandel, Edison, all of N.J., assignors to Technicare Corporation, Solon, Ohio

Filed Mar. 12, 1980, Ser. No. 129,813
Int. Cl.[3] A61B *10/00*
U.S. Cl. 128—660 **22 Claims**



1. Apparatus for conditioning a fluid transmission medium for an ultrasound imaging system used for examining a patient's breast, said apparatus comprising transducer means for transmitting to and receiving sonic energy from the patient,:

a main tank enclosing a first quantity of transmission medium and adapted to house an ultrasound transducer and associated focusing lens, and having an open top facing said patient;

a main reservoir in fluid communication with said main tank;

a main circulation circuit for circulating said fluid transmission medium between said main tank and said main reservoir and for conditioning the medium therein to facilitate the transmission of the ultrasound;

a suspension pool of transmission medium isolated from fluid communication with said main tank and adapted to receive a patient's breast;

a suspension pool reservoir in fluid communication with suspension pool; and,

a suspension pool circulation circuit for circulating said medium between said suspension pool and said suspension pool reservoir and for conditioning the medium therein to provide a substantially continuous fluid transmission medium from transducer through said main tank and through said suspension pool to the patient.

4,282,881

MANOMETER FOR INFUSION APPARATUS

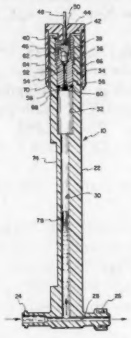
Robert J. Todd; Gregg H. Smith, both of Salt Lake City, and Gordon S. Reynolds, Bountiful, all of Utah, assignors to Sorenson Research Co., Inc., Salt Lake City, Utah

Filed May 10, 1979, Ser. No. 37,614
Int. Cl.[3] A61B *5/02*
U.S. Cl. 128—674 **35 Claims**

1. A manometer for measuring the hydrodynamic pressure of fluids parenterally administered to a patient, said manometer comprising:

a housing, said housing having a fluid inlet means and a fluid outlet means;

a continuously open passageway formed in said housing, said passageway accomodating continuous flow of fluid therethrough from said fluid inlet means to said fluid outlet means;



a pressure measuring chamber formed in said housing, one end of said measuring chamber being in fluid communication with said passageway, said measuring chamber having at the other end thereof a normally closed air space that defines a non-expansible volume; and

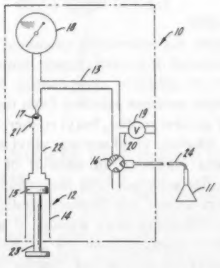
reference means, associated with said pressure measuring chamber, for indicating the pressure of the fluid flowing through said passageway.

4,282,882

APPARATUS FOR MODIFYING INTRAOCULAR PRESSURE

Maurice E. Langham, Lutherville, Md., assignor to Bio-Rad Laboratories, Inc., Richmond, Calif.

Continuation-in-part of Ser. No. 844,076, Oct. 17, 1977, abandoned. This application Sep. 25, 1979, Ser. No. 78,842
Int. Cl.[3] A61B *5/02*
U.S. Cl. 128—676 **2 Claims**



1. In an apparatus for modifying intraocular pressure in an eye by applying a negative pressure to a scleral portion of said eye, said apparatus including a hollow, scleral cup means intended to be applied to said scleral portion and a valved conduit extending into said cup for withdrawing gas from said cup to create said negative pressure, said cup means having an open portion defined by rigid thick walls the interior periphery of which defines the area of said scleral portion subjected to said negative pressure upon application of said cup means to said scleral portion, the improvement wherein the surface of said cup means intended to contact said scleral portion is an

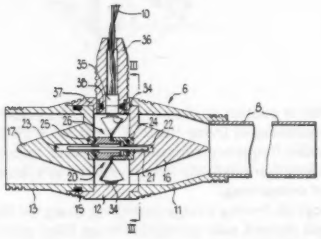
edge of said rigid thick walls, said edge being beveled inwardly with a concave radius of curvature.

4,282,883

SPIROMETERS

Moshe Yerushalmy, Turramurra, Australia, assignor to Scitec Corporation Ltd., Sydney, Australia

Filed Jun. 25, 1979, Ser. No. 51,897
Claims priority, application Australia, Jul. 3, 1978, PD4924
Int. Cl.³ A61B *5/08*
U.S. Cl. 128—726 **5 Claims**



1. A turbine transducer for a spirometer comprising a hollow body adapted to be held in the hand of and raised to the mouth of a patient, said body having an axially extending passage throughout its length,

means on the body at one end of said passage to receive a removable tube through which the patient can exhale air into said passage,

a pair of conical diffuser members each having a cone angle of between 35° and 40°,

means supporting said diffuser members in said passage coaxially, base to base, and spaced apart,

a turbine rotor assembly,

means mounting said turbine rotor assembly in the space between said conical diffuser members for rotation about the axis of said passage,

said turbine rotor assembly including a plurality of radially extending blades, said blades having portions exposed to the movement of air through the said passage extending at an angle of between 20° and 40° to the axis of rotation of the turbine assembly, selected ones of said blades having a portion directed toward the wall of said passage and lying adjacent thereto,

means defining apertures in said diffuser members supporting means permitting passage of air past said conical diffuser members to said blades to cause rotation of the turbine rotor assembly at a rate directly related to the rate of flow of air in said passage,

photo-optical sensor means,

an aperture in the side of said body opposite said blades,

means supporting said photo-optical sensor means in said aperture in said body allowing the photo-optical sensor means to direct radition onto each said blade portion directed towards the wall of said passage and to receive radiation reflected from each said blade portion during its passage past said photo-optical sensor means and thereby produce an electrical pulse,

said body being made in at least two separate parts, each part including one of said conical diffuser members and a part of said means for mounting said turbine rotor assembly,

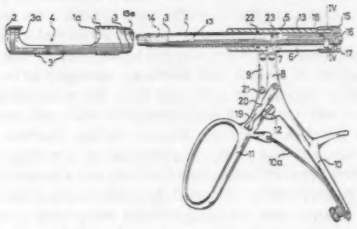
whereby the transducer may be dismantled and the turbine assembly removed for cleaning.

4,282,884

DEVICE FOR OBTAINING TISSUE SAMPLES

Manfred Boebel, Oetisheim, Fed. Rep. of Germany, assignor to Richard Wolf GmbH, Knittlingen, Fed. Rep. of Germany

Filed Jun. 4, 1979, Ser. No. 45,105
Claims priority, application Fed. Rep. of Germany, Jun. 8, 1978, 7817220[U]
Int. Cl.³ A61B *10/00*
U.S. Cl. 128—751 **9 Claims**



1. In a device for obtaining medical tissue samples from an operating area and being of the kind having a scissors handle and an outer shaft joined to a reinforcing housing, in which a tubular punch structure, having a closed distal end and provided with a recess near the distal closed end and also having a cutting edge directed to the proximal end of the device, can be pushed axially out of the open end of the outer shaft, the outer shaft having a cutting edge opposite to the cutting edge of the punch structure, and which punch structure can also be drawn back into the outer shaft to engage the cutting edges thereby to remove tissue from the operating area, the improvement comprising:

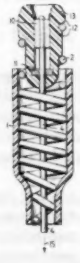
a receiver member positioned inside the tubular punch structure and having an open end terminating near the distal end of the outer shaft, said receiver member comprising a length of a tubular receiving tube proximally connected detachably to a rod, and said rod being proximally detachably connected to the housing so that after tissue has been collected in the distal end of the tubular receiving tube the receiver member may be detached and separated from the housing allowing the remainder of the device to remain in the operational area.

4,282,885

ELECTRODE FOR IMPLANTATION IN THE HEART

Hans-Jürgen Bisping, Tittardshang 12, D-5100 Aachen-Laurensberg, Fed. Rep. of Germany

Filed Aug. 21, 1978, Ser. No. 935,122
Int. Cl.³ A61N *1/04*
U.S. Cl. 128—785 **18 Claims**



1. In an electrode arranged to be inserted into the body of a patient and implanted in the patient's heart, which includes an

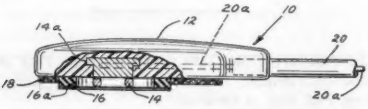
electrode lead, a structure in the form of a helix protruding at the end of the electrode lead which is directed toward the heart for screwing the electrode into cardiac tissue, and a protective device positioned to protrude beyond the front end of the helix during insertion of the electrode to protect against inadvertent hooling of the helix, the improvement wherein said protective device comprises a cylindrical body disposed within said helix to be axially movable relative to said helix between a protective position in which said body is at least flush with the end of said helix, for insertion of said electrode, and a retracted position in which said helix is exposed for screwing into the cardiac tissue, for performing implantation, said cylindrical body being provided at its outer peripheral surface with shaped regions which are adapted to the pitch of said helix in the manner of threads and which are arranged to come into operating engagement with said helix for preventing movement of said cylindrical body toward its retracted position by forces which are effective thereon during insertion of said electrode, and said electrode comprises an actuating element extending between said cylindrical body and a location outside of the patient's body when said electrode lead is at the implantation location, said actuating element comprising means positively engaging said cylindrical body for driving said cylindrical body in a positive manner from its protective position to its retracted position, by transmitting to said body a retracting force applied to said element at the location outside the patient's body.

4,282,886

ADHESIVE BONDED POSITIVE FIXATION EPICARDIAL LEAD

Wendell L. King, North Oaks, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.

Filed Nov. 13, 1979, Ser. No. 93,346
Int. Cl.³ A61N *1/04*
U.S. Cl. 128—785 **6 Claims**



1. An electrode assembly suitable for chronic implantation within the human body comprising:

an electrode support member of material substantially inert to body fluids;

an epicardial electrode attached to said electrode support member;

first means attached to said electrode support member capable of long-term adhesion of said electrode support member to body tissue for affixing said electrode support member to body tissue after a time subsequent to implantation of said electrode assembly without penetrating said body tissue; and

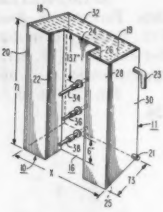
second means attached to said electrode support member capable of epicardial attachment of said electrode support member for affixing said electrode support member to body tissue without penetrating said body tissue from implantation of said electrode assembly until said time subsequent to implantation of said electrode assembly, when said second affixing means loses resiliency.

4,282,887

RIDGE-WAVEGUIDE APPLICATOR FOR TREATMENT WITH ELECTROMAGNETIC ENERGY

Fred Sterzer, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Oct. 11, 1979, Ser. No. 83,638
Int. Cl.³ A61N *1/40*
U.S. Cl. 128—804 **7 Claims**



1. A direct contact applicator for localized electromagnetic energy treatment of living tissue of a patient with signals at a desired radio frequency where for the desired treatment depth the wavelength is relatively long compared to a desired area of treatment comprising:

a waveguide having a ridge extending along the longitudinal length thereof, said waveguide being filled with a low loss and high dielectric medium like that of said patient, said waveguide including said ridge being dimensioned to propagate said signals therein as transverse electric mode waves where there is relatively little electric field component in the direction of propagation of said waves and to concentrate the signal energy in the region adjacent the ridge;

a substantially radio frequency transparent material adapted to conform to a body surface of said patient covering one end of said ridge waveguide; and

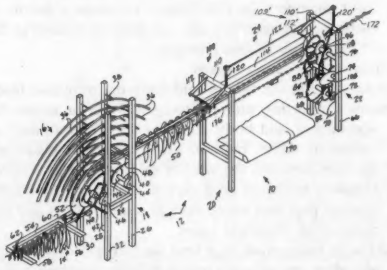
means coupled to said waveguide for applying said signals thereto for exciting propagation thereof in said transverse electric mode, whereby said signals are applied to said patient with the electric field component primarily parallel to said body surface.

4,282,888

APPARATUS FOR STRIPPING LEAVES FROM A STALK CURED TOBACCO PLANT

Jesse R. Pinkham, Winston-Salem, N.C., assignor to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.

Filed Dec. 22, 1978, Ser. No. 972,548
Int. Cl.³ A01D *1/00*
U.S. Cl. 130—30 R **10 Claims**



1. An apparatus for stripping the leaves from a stalk of a tobacco plant comprising:

(a) conveyor means for receiving a tobacco plant with its leaves disposed on at least one side of the conveyor means; and

(b) clamping means located adjacent the conveyor means which engage hold and maintain the leaves in their relative stalk position as the stalk is moved continuously past the clamping means to pull the leaves from the stalk.

4,282,889

METHOD AND APPARATUS FOR INFLUENCING THE PERMEABILITY OF WRAPPERS OF FILTER CIGARETTES OR THE LIKE

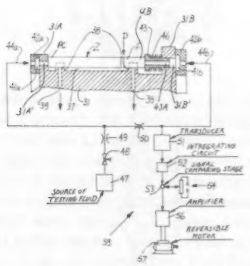
Rolf Dahlgrün, La Celle-St. Cloud, France, assignor to Hauni-Werke Korber & Co. KG, Hamburg, Fed. Rep. of Germany

Filed Oct. 3, 1979, Ser. No. 81,314

Claims priority, application Fed. Rep. of Germany, Oct. 18, 1978, 2845342

Int. Cl.[3] **A24B** *1/04;* **A24C** *5/46, 5/48, 5/56*

U.S. Cl. 131—281 **26 Claims**



1. A method of influencing the permeability of foraminous wrapping material for rod-shaped commodities which form part of or constitute smokers' products, comprising the steps of coating at least a portion of one side of the wrapping material with adhesive; converting the thus coated wrapping material into open-ended tubular wrappers of rod-shaped commodities; testing the wrappers with a gaseous fluid including establishing a pressure differential between the interior and the exterior of the wrappers and generating first signals denoting the rate of flow of testing fluid through the wrappers; comparing said first signals with a second signal denoting the desired rate of flow and generating third signals denoting the difference, if any, between said first signals and said second signal; and varying the quantity of adhesive which is applied per unit area of said one side of the wrapping material as a function of said third signals to thereby vary the permeability of the wrappers.

4,282,890

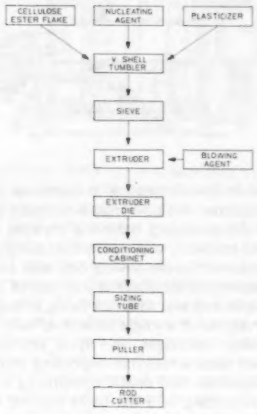
OPEN CELL STRUCTURE FOAMED CELLULOSE ACETATE FILTERS

Carl J. Howell, Jr., Charlotte, N.C.; David W. Trott, Fort Mill, S.C., and Jesse L. Riley, Charlotte, N.C., assignors to Celanese Corporation, New York, N.Y.

Division of Ser. No. 886,201, Mar. 13, 1978, Pat. No. 4,180,536. This application May 23, 1979, Ser. No. 41,577

Int. Cl.[3] **A24D** *3/04*

U.S. Cl. 131—332 **17 Claims**



8. The filter rod of claim **7** wherein said nucleating agent is a nucleating agent selected from the group consisting of molecular sieve materials, titanium dioxide, perlite, diatomaceous earth, limestone and talc.

4,282,891

FINGERNAIL TREATING DEVICE

Antoine Duceppe, Ville d'Anjou, Canada, assignor to Revelations Antoine Ltee, Ville d'Anjou, Canada

Filed Jun. 5, 1978, Ser. No. 912,887

Int. Cl.[3] **A45D** *29/18*

U.S. Cl. 132—73.5 **8 Claims**

1. A device for use in treating fingernails with liquid, said device comprising:

a flat-bottom container with a height, said container having a removable cover;

a liquid, disposed in said container, for treating said fingernails;

a sponge pad fitted into said container with a friction fit, said sponge pad comprising a means for preventing sloshing of said liquid in said container by virture of covering the entire diameter of said container; and

means, in said sponge pad, for snugly receiving at least said fingernail to be treated, said receiving means extending only partially into said sponge pad.

4,282,892

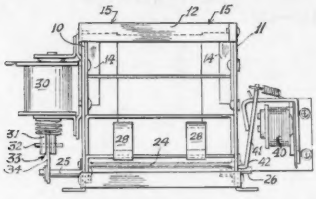
PAPER MONEY DISPENSING MEANS

Walter M. Burnside, Waukegan, Ill., assignor to Bally Manufacturing Corporation, Chicago, Ill.

Division of Ser. No. 864,928, Dec. 27, 1977, Pat. No. 4,190,066. This application Aug. 22, 1979, Ser. No. 68,615

Int. Cl.³ G07D *1/00*

U.S. Cl. 133—1 R **2 Claims**



1. Mechanism for dispensing transparent tubular paper money cartridges one at a time from a compact viewing magazine adapted for mounting behind a viewing window in a coin-controlled machine, said mechanism comprising: a skeletonized magazine structure having opposite end plates with adjoining opposite side members at least one of the sides being substantially open and said structure being arranged to confine the endwise portions of a single column of said tubular paper money-containing cartridges one upon another, said stack being supported upon a rockable dispensing cradle at the bottom of the magazine, said cradle comprising an inverted U-shaped yoke consisting of a flat bight portion with opposite ends turned down at right angles thereto to provide opposite yoke arms, a rod affixed to the inside of said yoke with opposite pivot ends projecting beyond said arms and each journalled in a corresponding portion of one of said end plates; a lock rod affixed to the inside face of said bight accentrically of said pivot rod and having opposite ends projecting through said yoke arms with ends thereof projecting freely beyond the appertaining end plates; an actuating electromagnet carried at one of the magazine ends and having an armature member drivingly connecting with one of the projecting ends of the lock rod for operation as a crank to rock said cradle from a normal position sustaining the bottom cartridge in the magazine to a dispensing position to discharge such bottom cartridge; a second electromagnet carried at the opposite end of the magazine and having a blocking armature member normally overlying one of the projecting ends of the lock rod to block dispensing movement of the cradle yoke, energization of the second electromagnet moving said armature member to non-blocking position; that one of the sides of the magazine which is substantially open exposing to view a substantial portion of the lengthwise aspects of the contained cartridges for displaying the monetary contents thereof when positioned behind a viewing window in a coin-controlled machine, as aforesaid.

4,282,893

CLEANING DEVICE FOR SWIMMING POOLS

Robert J. Kane, 5035 N. 12th St., Phoenix, Ariz. 85011

Filed Apr. 21, 1980, Ser. No. 141,898

Int. Cl.³ B08B *9/08, 3/02*

U.S. Cl. 134—167 R **10 Claims**

1. A cleaning device for swimming pools comprising:

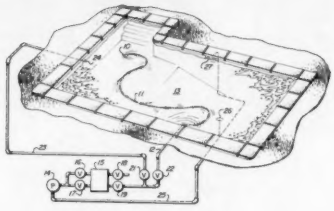
a generally conical shaped housing comprising a first portion forming the tip of the housing and a second portion the base of the housing,

said base portion defining a first fluid conduit arranged axially along at least a part of its length which is open at the base of the base portion for connection to an elongated flexible conduit which is connectable to a source of water under pressure,

said base portion further defining a plurality of second fluid conduits spacedly arranged around said first fluid conduit,

one end of each of said second fluid conduits terminating in a nozzle adjacent the base of said base portion, and

means for connecting the other end of said first fluid conduit with each of the other ends of said second fluid conduits interiorally of said base portion,



whereby water under pressure passing through said first fluid conduit from said one end to its other end thereof and through said second fluid conduits causes said cleaning device to move through the water in a swimming pool while dragging the flexible conduit behind it.

4,282,894

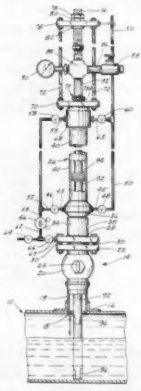
PRESSURE-OPERATED PORTABLE SIPHON APPARATUS FOR REMOVING CONCENTRATIONS OF LIQUID FROM A GAS PIPELINE

Walter C. Mills, and James W. Patterson, both of San Angelo, Tex., assignors to Northern Natural Gas Company, Omaha, Nebr.

Continuation-in-part of Ser. No. 832,673, Sep. 12, 1977, Pat. No. 4,155,372. This application May 21, 1979, Ser. No. 40,712

Int. Cl.³ F16K *51/00;* **F17D** *3/10;* **F04F** *10/00*

U.S. Cl. 137—15 **5 Claims**



1. The method of removing concentrations of liquid from a natural gas pipeline, comprising the steps of:

(a) locating a concentration of liquid in the pipeline;

(b) installing a valve means on said pipeline above the concentration of liquid;

(c) creating an opening in said pipeline which communicates with the interior of said valve means;

(d) mounting a removable secured hollow support means to said valve means, a vertically movable siphon pipe means being completely enclosed within said hollow support means;

(e) supplying operating pressure to said siphon pipe means, from within the pipeline, thereby lowering said siphon

pipe means through said valve means into the interior of said pipeline;

(f) utilizing the pressure within the pipeline to force the liquid upwardly through said siphon pipe means to a receiving area remote from said siphon pipe means;

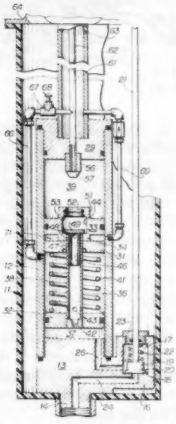
(g) and supplying operating pressure to said siphon pipe means, from within the pipeline, thereby raising said siphon pipe means from the interior of said pipeline above said valve means to enable removable of said hollow support means.

4,282,895

FREEZE-PROOF, POLLUTION FREE VALVE

Richard E. Young, San Leandro, Calif., assignor to Valve Engineering Service Corp., San Leandro, Calif.

Filed Apr. 20, 1979, Ser. No. 31,747
Int. Cl.³ E03B *9/04*
U.S. Cl. 137—281 **17 Claims**



1. A valve comprising a substantially closed cylinder having a first end and a second end, said valve being divided by a transverse partition into a first portion and a second portion, a first piston reciprocable in said first portion and a second piston reciprocable in said second portion, first means for causing said pistons to move together, resilient means biasing said pistons toward said first end, manually operable second means for admitting fluid under pressure into said first portion near said first end, third means for transmitting fluid from said second end to a point remote from said valve, an opening in said first piston permitting constricted fluid flow from said first end past said first piston, fourth means transmitting fluid from said first end of said first portion through said first means and through said second piston, fifth means cutting off flow through said third means when said second means is open and also when said second piston is moved toward said first end when said second means is closed, sixth means activates said fifth means when said second piston is adjacent said second end to allow fluid to flow from said fourth means into said third means, and when said second means is open said pistons are moved away from said first end by fluid pressure and when said second means is closed said resilient means biases said pistons away from said second end, said second piston thereby sucking fluid out of said third means.

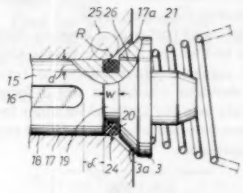
15. A valve according to claim **1** in which said valve is located below the frost line and said third means extends up to a point above the ground level.

4,282,896

PILOT OPERATED CHECK VALVE

Yoshihiro Makino, Takamatsu, Japan, assignor to Shinei Mfg. Co., Ltd., Takamatsu, Japan

Filed May 21, 1979, Ser. No. 40,880
Int. Cl.³ F16K *15/06*
U.S. Cl. 137—495 **10 Claims**



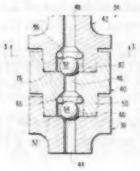
1. A pilot operated check valve comprising a poppet valve movable into engagement with a valve seat defined by a partition wall between a primary-side fluid compartment and a secondary-side fluid compartment by action of hydraulic pressure on the secondary side and adapted to close on the secondary side, a fluid passageway extending through the partition wall, means for actuating the poppet valve so as to move it out of engagement with the valve seat against hydraulic pressure on the secondary side, said poppet valve having a spool member integrally therewith on a front side thereof and adapted to slidably and closely fit into said fluid passageway, and O-ring mounting groove provided on said spool member in abutment relation with a seating surface of said poppet valve opposed to said valve seat so that an O-ring may be positioned in said fluid passageway upon said seating surface being brought into engagement with said valve seat, said O-ring mounted in said groove, a passage for fluid flow in said spool member leading from the front end of said spool member facing the primary-side fluid compartment to the secondary-side end surface of said spool member adjacent said O-ring mounting groove, at least a portion of said O-ring mounting groove communicating with said secondary-side fluid compartment through a restricted fluid passage.

4,282,897

VALVE ASSEMBLY FOR PRESSURIZED FLUID SYSTEMS

Charles F. de Mey, II, West Redding, Conn., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed May 29, 1979, Ser. No. 42,759
Int. Cl.³ F16K *15/04*
U.S. Cl. 137—515.7 **5 Claims**



1. A ball valve assembly for use in a liquid chromatography system where said liquid of said system contains particulate matter; said assembly comprising:

a housing defining a flow passage including a port and a shoulder downstream of and surrounding said port, said shoulder having a generally chamfered surface extending upstream therefrom, said housing further defining a chamber on the downstream side of said port;

a ball disposed in said chamber;

means for continuously self-sealing the interface between said chamfered surface of said shoulder and said ball and for preventing particulate matter remaining on said interface from entering subsequent flow streams, said means including a valve seat member disposed on said shoulder and having a central opening in registry with said inlet port, said valve seat member being formed of a material containing at least 50% pure gold;

a member, constituting part of said housing, further defining said chamber and having a face engaging said seat on the side thereof opposite said shoulder to retain said seat against said shoulder whereby a seal is formed between said face of said member and said shoulder for preventing communication between said chamber and said port externally about said seat.

4,282,898

FLOW METERING VALVE WITH OPERATOR SELECTABLE BOOSTED FLOW

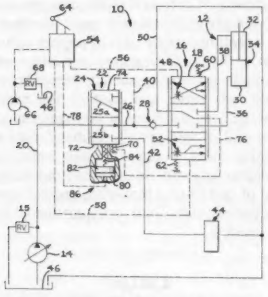
James L. Harmon, Joliet, and John A. Junck, Sandwich, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US/79/01033, § 371 Date Nov. 29, 1979, § 102(e) Date Nov. 29, 1979, PCT Pub. No. WO81/01595, PCT Pub. Date Jun. 11, 1981

This PCT application filed Nov. 29, 1979, Ser. No. 144,148

Int. Cl.³ F15B *13/042*

U.S. Cl. 137—596.13 **6 Claims**



1. In a system (**10**) for supplying fluid flow to a hydraulic work circuit (**12**), the system (**10**) having a single pressurized fluid source (**14**) for supplying pressurized fluid thereto, control valve means (**16**) for controlling delivery of fluid flow from said source (**14**) to selectively drive the circuit (**12**) and flow control means (**22**) for metering a portion of the fluid flow to the hydraulic circuit (**12**), the improvement comprising:

means (**86**) for controlling the magnitude of said portion in response to application thereto of a signal;

operator controlled input means (**78**) for operator selectively applying said signal to said means (**86**) for operator selectively directly controlling the magnitude of said portion in direct response to a controlling action inititated by an operator;

and wherein said flow control means (**22**) includes:

a valve element (**24**) positionable in a first position and in a second position;

means (**70**) for biasing said element (**24**) towards said first position thereof;

means (**25***a*, **25***b*) for allowing fluid flow to pass through said flow metering means (**22**) to said control valve means (**16**) in response to said element (**24**) being in said first position and for preventing said fluid flow in response to said element (**24**) being in said second position;

means (**40**) for opposing said biasing means (**70**) with a force determined by a pressure of said portion intermediate said flow control means (**22**) and said control valve means (**16**); and

means (**76**) for adding a force representative of the load to that of said biasing means (**70**) in response to a load experienced by said circuit (**12**);

and wherein said signal applying means (**78**) adds a force to that of said biasing means (**70**), the added force being in response to selective operator input.

4,282,899

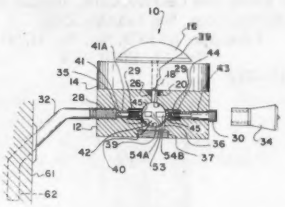
TIMED SHOWER HEAD VALVE

William H. Dunckhorst, P.O. Box 32, South Lake Tahoe, Calif. 95705

Continuation-in-part of Ser. No. 843,825, Oct. 20, 1978, abandoned. This application Aug. 7, 1979, Ser. No. 64,532

Int. Cl.³ F16K *11/087*

U.S. Cl. 137—624.18 **2 Claims**



1. A valve assembly adaptable for mounting on a conduit leading to a bath shower head and to a said bath shower head so as to conserve the amount of water employed for a complete shower in one cycle of operation of said assembly, by control of the time of individual periods of flow of water through said shower head, so as to provide a sequence of a plurality of timed periods of water flow separated by at least one period of non-flow of water during one cycle of operation,

in which said valve is structured and fitted with time control means so as to automatically provide a shower cycle sequence of a first timed period of water flow for wetting of the user, a second timed period of non-water flow to provide the user time to soap himself, without wasting water, and a third timed period of water flow to provide a rinse period for the user,

in which the assembly comprises

a valve housing

a clock timer device that serves as said time control means, which is mounted to said valve housing and fitted with a rotatable shaft, said clock timer incorporating spring clock work mechanism to cause said shaft to rotate, at a uniform velocity in a second direction for a circular angular sector generally equal to the circular angular sector that said shaft has been initially rotated manually in a first direction, with a first end of said shaft attachable externally to a knob,

a circular valve member rotatably mounted in an interior chamber in said valve housing and attached to said shaft,

an interior chamber of a shape to fit about the circular perimeter of said valve housing,

an internal inlet port and an internal outlet port in said valve housing each joining said interior chamber by an individual passageway to an external inlet port and an external outlet port respectively,

a first groove recessed in the circular perimeter of the valve member, and a second groove recessed in the circular groove of the valve member, with the axis of each groove lying substantially in a common plane that intersects the axis of both internal inlet and outlet ports, said common plane being substantially perpendicular to the axis of the rotatable shaft of the clock timer, and with each groove separated from the other groove along the periphery of the valve member by non-recessed sections of the valve member periphery, where

each said non-recessed section extends along an angular sector, in said common plane, so as to completely block an internal inlet port or internal outlet port when said non-recessed section is aligned with said internal port,

a through passageway in said valve member joining both said grooves,

said grooves and said non-recessed sections located so that in the initial and final position of the valve member a first non-recessed section completely blocks one internal port, so that in

a second position of the valve member, one recessed groove extends completely to both internal ports so as to permit water flow through said groove, so that in

a third position of the valve member, a second non-recessed section completely blocks an internal port, and so that in

a fourth position of the valve member each internal port communicates directly with one recessed groove with water flow travelling between said ports through the through passageway in said valve member,

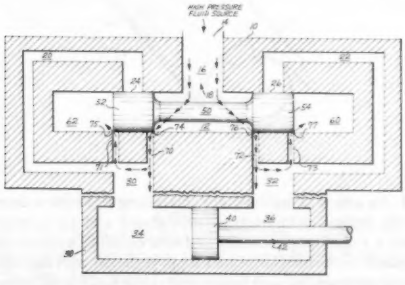
said second, third, fourth and final positions being positions that the valve member is rotated to, in sequence, in a second direction by the timer shaft after the timer shaft has been rotated manually in the first direction, opposed to said second direction, from the said initial and final position to the said second position.

4,282,900

EXTENDED LIFE SPOOL VALVE

Andu Lauba, Bellevue, and Egil R. Pettersen, Kent, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Apr. 30, 1979, Ser. No. 34,330
Int. Cl.³ F15B *13/04*
U.S. Cl. 137—625.3 **2 Claims**



1. In a fluid flow valve having:

a valve body including a sleeve portion provided therein and provided primary passageways for accessing said sleeve portion at main metering orifices; and

a spool being slidable in said sleeve portion and having land portions thereon for forming main metering surfaces with said main metering orifices to control fluid flow through the valve, the improvement comprising:

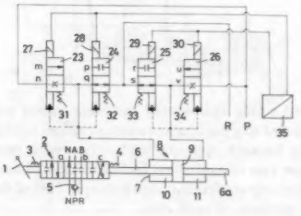
secondary passageways provided in said valve body for accessing said sleeve portion at sacrificial metering orifices, said sacrificial orifices forming sacrificial metering surfaces with said land portions, said secondary passageways and sacrificial metering surfaces being predeterminedly positioned relative to said primary passageways and main metering surfaces for forming a fluid flow path in parallel with said primary passageways and main metering surfaces and said land portions underlapping said sacrificial metering surfaces and overlapping said main metering surfaces in the valve's neutral position such that fluid through the valve, in the valve's neutral position, is carried by said secondary passageways and sacrificial orifices thereby reducing fluid flow erosion at said main metering surfaces.

4,282,901

PROPORTIONAL CONTROL TYPE REMOTE-CONTROL DIRECTION SWITCHING CONTROL VALVE DEVICE

Yuji Satoh, Higashimatsuyama, Japan, assignor to Diesel Kiki Co., Ltd., Tokyo, Japan

Filed Jul. 13, 1979, Ser. No. 57,410
Claims priority, application Japan, Jul. 18, 1978, 53-86790; Jul. 18, 1978, 53-86791
Int. Cl.³ F15B *13/043*
U.S. Cl. 137—625.64 **1 Claim**



1. A proportional control type remote-control direction switching control valve device comprising;

a hydraulic power source;

a hydraulic fluid tank;

a direction switching control valve having a valve passage whose opening is varied in response to an amount of movement of a spool, said valve including a hydraulic actuator for actuation thereof, said actuator including hydraulic fluid chambers on opposite sides of a piston;

an electromagnetic pressure reducing valve interposed and connected between each of said fluid chambers and said hydraulic power source, said electromagnetic pressure reducing valve being movable between a full-open position and a throttle position and urged to the full-open position by means of an electromagnetic force;

and an electromagnetic open or closed valve interposed and connected between each of said fluid chambers and said liquid tank, said electromagnetic opening and closing valve being urged to a closed position by an electromagnetic force and wherein the electromagnetic force on said electromagnetic pressure reducing valves and said electromagnetic open or closed valves is opposed by the pressure in each of said fluid chambers of said hydraulic actuator and said electromagnetic reducing valves being operated at a pressure lower than that of said electromagnetic open or closed valve.

4,282,902

VALVE APPARATUS FOR SIMULTANEOUS CONTROL OF A PLURALITY OF FLUID PATHS

John L. Haynes, Redwood City, Calif., assignor to Becton Dickinson & Company, Paramus, N.J.

Filed May 4, 1979, Ser. No. 35,835
Int. Cl.³ F17D *3/01*
U.S. Cl. 137—636.1 **8 Claims**

1. Valve apparatus for simultaneously controlling the flow of fluids in a plurality of flow paths comprising:

a rotatable shaft;

a plurality of cams mounted in parallel planes on said shaft for rotation therewith, each of said cams having a plurality of cam surfaces;

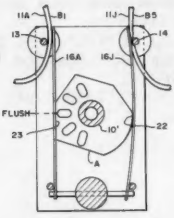
detent means for providing a predetermined plurality of switch positions for said shaft and cams;

a plurality of flexible tubes providing said plurality of flow paths for said fluids, each unique pair of tubes being lo-

cated in a plane corresponding to a unique one of said cams;

rigid abutment means located on an opposite side of said tubes relative to said cam surfaces;

said cam surfaces of said cams having preselected radii from the axis of rotation of said shaft to selectively compress



closed a tube against said abutment means when the shaft is rotated to a particular switch position, said pairs of tubes being located opposite each other with respect to said unique one of said cams and each tube of such pair being exclusively associated with a unique half of the number of cam surfaces of such cam.

4,282,903

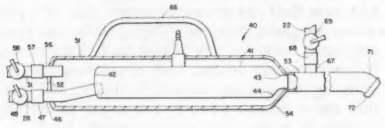
STEAM CLEANING MACHINE

Charles A. Powell, Oxford, Fla., assignor to National Power Corporation, Wildwood, Fla.

Filed Feb. 13, 1979, Ser. No. 11,941

Int. Cl.[3] F05B *1/24;* B08B *3/00*

U.S. Cl. 137—893 **16 Claims**



1. A steam generating and discharging machine comprising in combination, a hand-held steam generator unit and a fluid supply system therefor,

(a) said hand-held steam generator unit comprising:

(i) means for producing heat solely by combustion including a substantially closed combustion chamber of heat conducting material having an exhaust pipe extending therefrom, said exhaust pipe having a free open end spaced from said combustion chamber,

(ii) means remote from said exhaust pipe for admitting a combustible fluid mixture to said combustion chamber,

(iii) a jacket having a closed end in spaced surrounding relationship to said combustion chamber, and including a steam discharge pipe surrounding said exhaust pipe and having a free end extending beyond said free end of said exhaust pipe,

(iv) means extending into said combustion chamber for igniting said combustible mixture therein, and

(v) means for admitting water to said jacket remote from said steam discharge pipe,

(vi) whereby combustion gasses from said combustion chamber discharge from said exhaust pipe open end and into said steam discharge pipe and mixing with said water and steam, therein, prior to discharge from said steam discharge pipe,

(b) said fluid supply system comprising means for producing said combustible fluid mixture including:

(i) means for storing a supply of fluid fuel,

(ii) means for supplying oxygen-containing fluid,

(iii) means for mixing said fluids to produce said combustible fluid mixture,

(iv) means comprising flexible conduit means for connecting said mixing means and said combustible fluid mixture admitting means, and

(c) said fluid supply means further comprising water supplying conduit means comprising flexible conduit means connected to said water admitting means.

4,282,904

ARTICLE OF MANUFACTURE COMPRISING A HOLLOW ROD OF LONGITUDINALLY GATHERED TUBING WITH A SUPPORT SHEATH SURROUNDING THE HOLLOW ROD, PROCESS FOR PRODUCING SAME, AND USE OF THE ARTICLE IN PRODUCING SAUSAGES

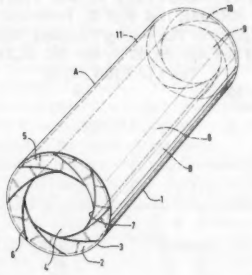
Reinhold Becker, and Wolfgang Michel, both of Wiesbaden, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Dec. 6, 1979, Ser. No. 100,745

Claims priority, application Fed. Rep. of Germany, Dec. 11, 1978, 2853400

Int. Cl.[3] F16 *9/00*

U.S. Cl. 138—109 **2 Claims**



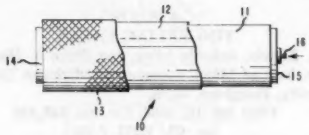
1. An article of manufacture comprising a one-piece container-like hollow cylindrical support sheath and an open-ended hollow rod of longitudinally gathered cellulose hydrate tubing disposed in the interior of said support sheath with the support sheath surrounding said hollow rod while leaving the open end of the hollow rod free; said hollow rod constituting a formed, but unutilized, sausage casing; said support sheath being made from a formable, flexible sheet of fusible, thermoplastic polymer material and being disposed around said hollow rod with the length of said sheath being such that the ends of the sheath project outwardly beyond the ends of the hollow rod; said outwardly projecting sheath ends being rotationally twisted around their longitudinal axis by at least 30° and buckled to form a plurality of permanently shaped, partially overlapping helical folds whereby the inside diameters of the projecting ends of said sheath are partially narrowed to form integral sheath end walls with a center opening in each end wall; said folds being longitudinally compressed to compact said sheath while maintaining a straight, central, longitudinally axial free space at both ends as a passage for removing with simultaneous unfolding the tubing of the hollow rod from the interior of the support sheath; adjacent folds being at least partially fused to firmly join them to each other and to make the shape of the integral end walls permanent; said end wall ensuring that the shape and position of the hollow rod in the interior of the support sheath are fixed when the hollow rod is soaked in water or moistened.

4,282,905

MANUFACTURE OF SEAMLESS LAMINATED TUBING

Raymond J. Dopkin, and Jerome Hochberg, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Sep. 1, 1978, Ser. No. 938,800
Int. Cl.[3] F16L 11/00; B32B 31/16; B65C 3/26; B29C 17/00
U.S. Cl. 156/74 12 Claims



1. The process of forming a laminated pipe which comprises:
(1) placing a tube of chemically inert thermoplastic polymer within a close-fitting seamless sleeve of fabric made from an inert fiber;
(2) heating the tube to the softening temperature of the polymer;
(3) expanding the softened tube by inflation or centrifugal force, thereby forcing the softened polymer between the interstices of the fabric sleeve; and
(4) cooling the tube while polymer is still within the sleeve so that an integral pipe is formed by means of a bond between the polymer and the fabric.

9. A laminated seamless tube comprising a seamless cylindrical thermoplastic liner and a seamless cylindrical fabric sleeve around the liner, there being a bond between the liner and the sleeve formed by thermoplastic material forced within the sleeve.

4,282,906

NARROW ELASTIC FABRIC

Thomas C. Black, Middletown, Canada, assignor to J. P. Stevens & Co., Inc., New York, N.Y.

Division of Ser. No. 831,457, Sep. 7, 1977, Pat. No. 4,164,963.
This application Apr. 27, 1979, Ser. No. 34,089
Int. Cl.[3] D03D 15/02, 5/00
U.S. Cl. 139—422 7 Claims

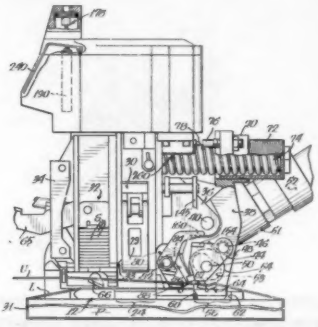
1. A narrow woven fabric comprising:
a plurality of shrunk non-elastomeric warp threads;
a plurality of bare elastomeric warp threads separated by said shrunk warp threads;
a pair of elastomeric threads forming the edge warp threads, each of said edge warp threads having a loosely wrapped yarn thereon which was heat set before being wrapped about said edge warp threads for increasing the holding of said edge warp threads without modifying the diameter of said edge warp threads; and
a shrunk non-elastomeric weft thread.

4,282,907

TENSION SENSING MECHANISM FOR STRAPPING TOOL

Robert J. Massion, Woodstock; Peter Lems, Wilmette, and Robert J. Nix, Park Ridge, all of Ill., assignors to Signode Corporation, Glenview, Ill.

Filed Oct. 10, 1979, Ser. No. 83,455
Int. Cl.[3] B21F 9/02, 45/00
U.S. Cl. 140—93.4 16 Claims



1. In a strapping tool for tensioning a loop of strapping having overlapping end portions about an article;
a frame;
means for gripping one of the two strap portions and restraining it from movement relative to said frame;
a first arm pivotally mounted to said frame for pivoting movement in a first direction and in a second, opposite direction;
first biasing means for biasing said first arm in said first direction;
a second arm pivotally mounted on said first arm for pivoting movement in the first and second directions away from and toward the other of said two strap portions, respectively;
second biasing means for biasing said second arm in said second direction;
tensioning means connected to and mounted for movement with said second arm for engaging the said other strap portion and effective when operated for progressively applying tension to the loop whereby, at a predetermined tension level, the loop tension reaction force on said first arm urges said first arm to overcome said first biasing means and pivot relative to said frame in said second direction; and
control means responsive to the pivoting movement of said first arm in said second direction for terminating the operation of said tensioning means at the predetermined loop tension level.

4,282,908

TRANSFERRING AND TRANSPORTING ELONGATED MAGNETIC ARTICLES FOR TREATMENT SUCH AS LEAD STRAIGHTENING

Kristen E. Bankes, Reading; Anderson F. Johnson, Jr., Sinking Spring; Donald M. Large, Temple, and Fred J. Reinhard, Reading, all of Pa., assignors to Western Electric Co., Inc., New York, N.Y.

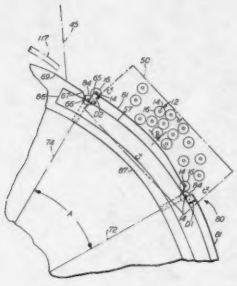
Filed Sep. 4, 1979, Ser. No. 72,255
Int. Cl.[3] B21F 1/02
U.S. Cl. 140—147 24 Claims

1. A method of transferring and transporting elongated, magnetic articles, comprising:
orienting a supply of the articles so the elongated dimension of each article is substantially transverse to a given direction in which said articles are to be transported;

urging the articles into contact with a transport member, said member having a succession of slots adapted to receive the articles;

advancing the transport member in the given direction in communication with the supply of articles to permit the articles to be urged into the successive slots in the member;

magnetically attracting the articles into the slots and supporting the articles in the slots along a fixed first level



support sufficiently to stabilize such articles therealong and to prevent more than a predetermined number of articles from entering each of the slots;

magnetically attracting the entered articles as such articles are advanced by the transport member beyond the supply of the articles; and

discontinuing supporting the articles at the first level after the articles are so advanced beyond the supply and magnetically attracting the entered articles further into the slots to a predetermined second level.

4,282,909

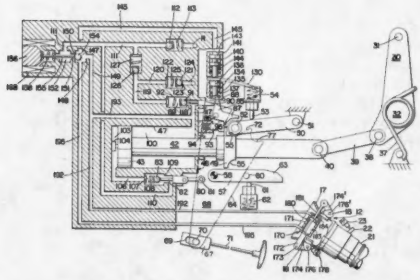
AERIAL REFUELING DEVICE

Charles R. Clark, Mission Viejo; Lowell R. Hanson, Lakewood, and Gerald G. Steele, Mission Viejo, all of Calif., assignors to Parker-Hannifin Corporation, Cleveland, Ohio

Filed Feb. 5, 1979, Ser. No. 9,213

Int. Cl.[3] **B65B** *3/04;* **B64D** *39/06*

U.S. Cl. 141—98 **46 Claims**



1. A device for opening a door on an aircraft to expose a refueling receptacle having latches to lock a nozzle to the receptacle, said device comprising a hydraulic door actuator having a rod connectable to said door for moving the door to open position when the rod is extended and to closed position when the rod is retracted, a piston connected to the rod and dividing the door actuator into first and second chambers, an inlet for pressurized fluid, a single supply conduit connecting the inlet to the door actuator and connected to one of said chambers, a first valve in said supply conduit and normally closed to isolate the inlet from said supply conduit, uplock means, first means movable from a first position in which it permits said uplock means to lock the rod in retracted position to a second position in which it moves said uplock means to a rod unlock position, valve opening means movable by the first means to a position for opening said first valve when the first means is moved toward its second position whereby pressurized fluid from the inlet passes through said supply conduit to said door actuator for extending said rod, and means for moving said first means.

4,282,910

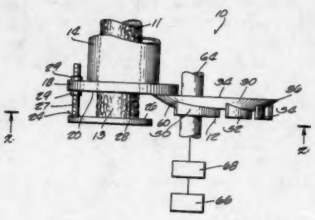
FINGERLING SHEAR

Tauno B. Kilpela, Atlantic Mine, and Bruce A. Haataja, Lake Linden, both of Mich., assignors to Michigan Technological University, Houghton, Mich.

Filed Jul. 10, 1980, Ser. No. 168,366

Int. Cl.[3] **B27L** *7/00*

U.S. Cl. 144—3 K **7 Claims**



1. A fingerling shear comprising means for supporting an elongated piece of wood having a grain direction, means for shearing a length of the elongated wood in a plane transverse to the grain direction and for splitting the sheared length along the grain direction to form a plurality of fingerlings, said shearing means comprising a planar shearing blade, said blade being supported for rotation about an axis, the planar shearing blade including opposed surfaces and a peripheral involute cutting edge adapted to engage the elongated piece of wood during rotation of the planar shearing blade and for shearing off a length of that piece of wood, and a plurality of splitting blades fixed to one of said surfaces of the planar shearing blade and spaced along the involute cutting edge, the splitting blades each including a leading cutting edge spaced from said involute cutting edge and extending tranversely to said one surface, said cutting edges of said splitting blades being adapted to sequentially engage portions of the sheared length of the wood stock to sequentially split fingerlings from said sheared length.

4,282,911

COMBINED HANGER AND BAG FOR A HANGER BAG

Kojiro Sumitomo, Taipei, Taiwan, assignor to Sanyei Corporation, Japan

Filed Mar. 10, 1980, Ser. No. 128,392

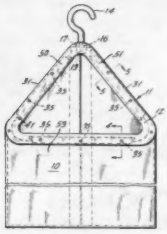
Int. Cl.[3] **A45C** *11/00;* **B65D** *85/18*

U.S. Cl. 150—1 **7 Claims**

1. A combined hanger and bag, comprising: a hanger comprised of a frame having a bottom run and at least one run extending upwardly from said bottom run and in a common plane therewith; said hanger frame comprising a pair of parallel and congruent sections, with one said section being a principal support section and the other said section being a securement section; said principal support section having a plurality of extensions extending therefrom; said securement section having a plurality of corresponding openings for securely receiving and holding said extensions in said openings when said two sections are placed together;

a bag having an open upper end; a plurality of openings formed in said upper end of said bag; said bag openings each corresponding to the position of a said extension on

said main support section; said bag being placed such that the portions thereof including said bag openings is placed between said hanger frame sections; said extensions pass-



ing through said bag openings when said sections are placed together;

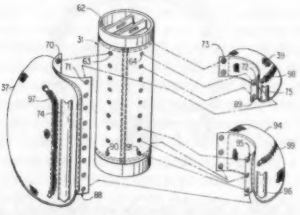
said hanger also including suspension means for suspending said hanger.

4,282,912

UNIVERSAL GOLF BAG

William L. Brown, Box 571, 1739 Middle St., Sullivan's Island, S.C. 29482

Filed Oct. 25, 1979, Ser. No. 88,183
Int. Cl.³ A63B *55/00*
U.S. Cl. 150—1.5 C **33 Claims**



1. A bag for transporting golf equipment comprising:

a. a longitudinal structure operative to hold said golf equipment;

b. a plurality of pockets, each securable to said longitudinal structure;

c. a fastening area on the outside surface of said longitudinal structure operative for the securing of said plurality of pockets;

d. a mounting area on the outside surface of said longitudinal structure not operative for the securing of said plurality of pockets;

e. a plurality of bag fastening means secured to said fastening area of said longitudinal structure and spaced apart a pre-determined distance or multiples of said pre-determined distance; and

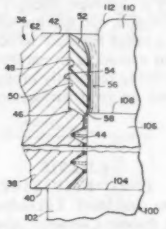
f. a bag top insert operative to be removable and rotatable, whereby if said bag is mounted on any type of cart, said mounting area would face said cart and said fastening area would face away from said cart.

4,282,913

SELF-LOCKING NUT AND MANUFACTURE AND COMPONENT THEREFOR

Paul A. Trimmer, Berkeley Heights, N.J., assignor to Amerace Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 781,485, Mar. 25, 1977, abandoned. This application Mar. 8, 1978, Ser. No. 884,638
Int. Cl.³ F16B *39/34*
U.S. Cl. 411—303 **39 Claims**



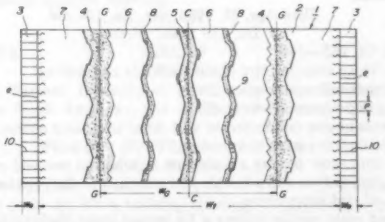
1. A prevailing torque type self-locking nut comprising a metallic nut body having first and second opposite ends, an internal screw thread of predetermined nominal major and minor diameters, said thread located between said ends and having a first radial end adjacent said first end of said body and adapted to be entered by a complementary externally threaded member, said body further having a well portion extending axially from said second end of said body toward said thread, said well portion having an internal surface facing the thread axis and spaced therefrom a distance greater than one-half the major thread diameter, and a self-locking element of thread impressionable thermoplastic material, at least a substantial portion of which is within said well portion and having an external surface secured by adhesion to said internal surface of said well portion, an internal surface at least in part initially unthreaded and confronting the thread axis and spaced therefrom a distance less than one-half the major thread diameter, a first axial end facing the first end of said body and a second axial end facing the second end of said body, the ratio of the axial length of said element to its radial thickness being greater than 2.5 and said element is formed by melting powder of said material in situ.

4,282,914

PNEUMATIC TIRE FOR HEAVY LOAD VEHICLES

Hiroyoshi Takigawa, Kodaira; Nobuhiro Miyamura, Higashimurayama; Hiroshi Ogawa, Kodaira, and Shinichiro Ohkuni, Tokyo, all of Japan, assignors to Bridgestone Tire Co., Ltd., Tokyo, Japan

Filed May 17, 1979, Ser. No. 39,972
Claims priority, application Japan, May 26, 1978, 53-62944
Int. Cl.³ B60C *11/00, 11/08*
U.S. Cl. 152—209 D **4 Claims**



1. In a pneumatic radial tire for heavy load vehicles compris-

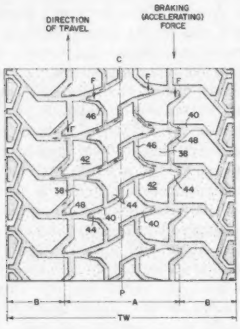
ing a pair of annular bead bundles, a radial carcass toroidally extending between these bead bundles, and a reinforcing belt superimposed about the carcass and providing a tread composed of a crown portion including the reinforcing belt, the improvement comprising; said tread composed of a relatively flat main region exclusively brought into contact with ground when the tire is normally running and a narrow inclined region located at both side edges of said main region, said narrow inclined region including a number of notches transversely extending said tread and circumferentially spaced apart from each other, said notches arranged circumferentially and spaced from each other by an average distance of 1% to 5% of the width of said main region, said narrow inclined region inclined at an angle within a range from 30° to 60° to a tangent drawn from said tread and extending in parallel with the rotational axis of the tire and being resiliently brought into contact with wheel prints formed on road surface to prevent wandering phenomenon.

4,282,915

PNEUMATIC TIRE

Jean F. L. Fontaine, Ingeldorf, Luxembourg, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Feb. 21, 1980, Ser. No. 123,134
Int. Cl.³ B60C *11/00*
U.S. Cl. 152—209 R **7 Claims**



1. A pneumatic tire having a ground-engaging tread portion characterized by said tread portion having a plurality of independent projections placed about the circumference of said tire and arranged so as to provide a plurality of substantially axially extending grooves from the centerplane of the tire to the tread edge, said independent projections have a rigid portion and at least one flexible portion such that when a braking force is applied to the tire said flexible portion of said independent projections deform so as to improve water drainage from the tread portion of the tire.

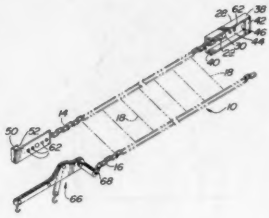
4,282,916

EASILY MOUNTED ANTI-SKID TIRE CHAIN

Carl A. Carlson, 2839 Eddington Ave., Cornwells Heights, Pa. 19020

Filed Apr. 28, 1980, Ser. No. 144,234
Int. Cl.³ B60C *27/00*
U.S. Cl. 152—241 **3 Claims**

1. In an anti-skid tire chain assembly comprising
a circumferential inner chain,
a circumferential outer chain,
cross chains connected to said inner and outer chains.
the improvement comprising,
a connector having a male part attached to one end of said inner chain and a female part attached to the opposite end of said inner chain,
said male part including a lip turned upon itself to form a U-shape in cross section and defining a first space,
said female part having sides and a base defining a channel shape and a bridging plate connecting said sides and defining a second space,
said lip being guided into said second space by said sides and being received in said channel between said sides of said female part and within said second space,



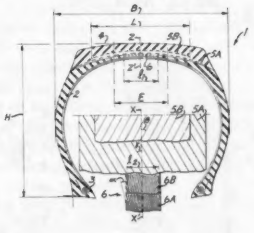
said bridging plate being snugly received in said first space, so as to lock said male and female parts together, and
a toggle device attached to the opposite ends of said outer chain for tightening said outer chain about said tire.

4,282,917

RADIAL CARCASS TIRE EMPLOYING CARCASS EXPANSION LIMITING BLOCK

Jean Pommier, Clermont-Ferrand, France, assignor to Compagnie Generale des Etablissements Michelin, Clermont-Ferrand, France

Continuation-in-part of Ser. No. 44,478, Jun. 1, 1979, abandoned. This application Jan. 30, 1980, Ser. No. 117,039
Claims priority, application France, Mar. 29, 1979, 79 08176
Int. Cl.³ B60C *9/08, 9/20*
U.S. Cl. 152—352 R **11 Claims**



1. A tire with a radial carcass reinforcement anchored on both sides to at least one bead ring and with a tread reinforcement formed of at least two superimposed work plies of wires or cables which are parallel in each ply and crossed from one ply to the other forming acute angles of between 10° and 45° with the longitudinal direction of the tire, the tread reinforcement, seen in meridian cross section, being parallel to the radial carcass reinforcement along an equatorial zone and being arranged between the radial carcass reinforcement and the tread, characterized by the fact that between the radial carcass reinforcement and the tread reinforcement in the equatorial zone along which the tread reinforcement is parallel to the radial carcass reinforcement there is arranged a limiting block formed of two superimposed plies of wires or cables of low extensibility which are parallel to each other in each ply and crossed from one ply to the other forming with the longitudinal direction angles of opposite sign, each being both other than zero and less in absolute value than one-half of the smallest angle of the wires or cables of the work plies, the axial width of the limiting block being both between 60% and 100% of the axial width of the equatorial zone along which the tread

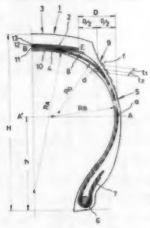
reinforcement is parallel to the radial carcass reinforcement and, for a ratio H/B of between 0.3 and 1.2, between a maximum value $M_b=(-80\ H/B)+100$ and a minimum value $m_b=(-48\ H/B)+60$ expressed in percentage of the overall maximum axial width B of the tire, and by the fact that for a ratio H/B of between 0.3 and 1.2, the axial width of the narrowest work ply or the common axial width of the work plies of the tread reinforcement is between a maximum value $M_a=(-50\ H/B)+110$ and a minimum value $m_a=(-30\ H/B)+85$ expressed in percentage of the overall maximum axial width B of the tire, H being the overall radial height of the tire on a rim and wherein the wires or cables of low extensibility of the limiting block have a relative elongation less than 0.2% under a load equal to 10% of their rupture load.

4,282,918

CARCASS ARRANGEMENT IN SHOULDER OF PNEUMATIC TIRE

Hajime Tomoda, Atsugi, and Ken Takahashi, Hiratsuka, both of Japan, assignors to The Yokohama Rubber Co., Ltd., Tokyo, Japan

Filed Jun. 15, 1979, Ser. No. 49,034
Claims priority, application Japan, Jun. 29, 1978, 53/78064
Int. Cl.³ B60C *9/02*
U.S. Cl. 152—353 C **7 Claims**



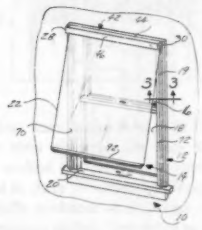
1. An improved pneumatic tire comprising a belt layer composed of a plurality of crossing belt plies embedded in the tread portion, an inner liner layer, and a carcass ply embedded along the tread portion, shoulder portion, side wall portion and bead portion and arranged in the radial direction or substantially in the radial direction, said carcass ply being contiguous to the belt layer at the center of the tire top and being gradually increasingly separated from the belt layer toward both ends of said belt layer by a wedge-shaped elastic interposing member, said carcass ply further having a natural sectional profile and in the region between the maximum width position (A–A') of the tire and the center (B) of the tire top, said natural sectional profile is defined by three curves (circles), that is, a curve having a curvature radius (Ra) in the tread portion, a curve having a curvature radius (Rb) in the side wall portion and a curve having a curvature radius (Rg) in the shoulder portion, which consists of a circle tangential to said two curves, said curvature radii (Ra), (Rb) and (Rg) satisfying the requirement of $(Ra)>(Rb)\geqq(Rg)$, wherein the improvement consists in that said inner liner layer is integrally formed with no interiorly facing projections thereon and that said carcass ply is disposed in the shoulder portion of the tire in the vicinity of the center of thickness of the shoulder portion and is arranged so that, in connection with the central portion (d) of the carcass ply on the central line of the distance (D) in the widthwise direction of the tire between the central point (a) of the carcass ply on the maximum width portion (A–A') of the tire and the outermost end portion (E) of the region where at least two belt plies cross each other, the thickness t_2 of the inner liner layer in the direction of the normal line (f) of the carcass profile passing through said central point (d) on the inside of the carcass ply and the thickness t_1 in the direction of said normal line (f) on the outside of the carcass ply satisfy the requirement of $0.3\leqq t_2/t_1\leqq 1.0$ and so that the thickness t_2 of the inner liner layer is largest in the vicinity of said central point (d) in the region between the central point (a) of the carcass ply on the maximum width portion (A–A') of the tire and the outermost end portion (E) where at least two belt plies cross each other and the thickness t_2 of the inner liner layer is gradually decreased toward said central point (a) and outermost end portion (E).

4,282,919

INTERIOR STORM WINDOW

Francis D. Teno, 17696 Toepfer, East Detroit, Mich. 48021

Filed Apr. 9, 1980, Ser. No. 138,662
Int. Cl.³ E06B *9/08*
U.S. Cl. 160—23 R **7 Claims**



1. An auxiliary window for sealing an existing window opening comprising:

a flexible sheet;

means for extendably and retractably supporting said sheet such that the sheet is extendable over the entire surface area of said existing window opening;

means, carrying and releasably surrounding said supporting means, for sealingly covering said supporting means, said covering means including:

a first member adapted to be mounted to the vertical planar surface surrounding said window opening; and

a second member pivotally connected to said first member at a first end thereof;

said first and second members being releasably interlockable along the entire length of a second edge so as to surround the supporting means and trap the top portion of the sheet therebetween to provide an air tight seal therealong;

said supporting means including:

a spring roller adapted to carry said flexible sheet; and

first and second spaced end brackets mounted to said first member of said covering means and adapted to rotatably support said spring roller therebetween;

means for releasably clamping the side edges of said sheet when said sheet is extended over said existing window opening, said clamping means being adapted to be secured to the vertical planar surfaces surrounding said existing window opening; and

means for sealingly locking the bottommost edge of said sheet to the planar surface adjacent the bottom of said existing window opening.

4,282,920

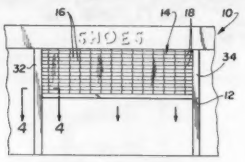
GRILLE

Paul E. Kremm, Lindenhurst, N.Y., assignor to Jim Walter Doors North American, Div. of The Celotex Corp., Tampa, Fla.

Filed Jun. 25, 1979, Ser. No. 51,620
Int. Cl.³ E06B *9/08*
U.S. Cl. 160—133 **4 Claims**

1. As a closure for a building opening, an improved vertically movable grille operatively disposed for opening and closing movement in said building opening comprising, in combination, two vertically oriented hollow members each

disposed along an opposite side of said building opening and each having a vertically oriented slot in facing relation to said building opening so as to provide vertical guideways for said grille, a grille body formed of horizontally oriented spaced apart rods interconnected by vertically oriented links in attached relation to adjacent pairs of said rods, each said link having a slot of a selected size therein, plural transparent plastic slats having operative horizontally oriented positions resulting from being projected through said slots of said links in



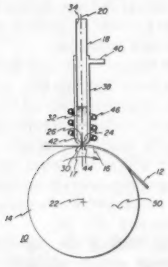
horizontal alignment with each other, each said slat being of a transverse size such that the opposite ends thereof extend through said guideway slots into said hollow members, and crimps in the construction material of each of said slats at said opposite ends within said hollow members effective to modify the shape thereof so as to obviate sliding movement of said slat ends through said slots of those of said links adjacent said ends, whereby said crimped slat ends are only nominally vulnerable to tampering in said hollow members while being effective in maintaining said slats in position on said grille.

4,282,921

METHOD FOR MELT PUDDLE CONTROL AND QUENCH RATE IMPROVEMENT IN MELT-SPINNING OF METALLIC RIBBONS

Howard H. Liebermann, Gloversville, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Sep. 17, 1979, Ser. No. 76,364
Int. Cl.³ B22D *11/06*
U.S. Cl. 164—463 **9 Claims**



1. An improved method for chill-block melt-spinning metallic ribbon comprising preparation of a molten alloy in a reservoir in a crucible, ejecting a melt stream of said molten alloy through an orifice in said crucible onto a moving substrate surface to form a molten alloy puddle thereon, and rapidly quenching said ejected alloy to form a continuous metallic ribbon from said molten alloy puddle, the improvement comprising

supplying a confluent gas at a predetermined flow rate, said confluent gas being coaxial with and encompassing said ejected melt stream and bearing down on and surrounding, said molten alloy puddle as said ribbon is formed therefrom.

4,282,922

LEAD COATED ALUMINA FIBER AND LEAD MATRIX COMPOSITES THEREOF

Hans S. Hartmann, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed May 16, 1980, Ser. No. 150,423
Int. Cl.³ B22D *19/14*
U.S. Cl. 164—97 **5 Claims**

1. A process for preparing lead-coated alumina fibers useful for reinforcement in lead matrix composites, comprising applying to the alumina fibers a solution or dispersion of glass containing at least about 74% lead oxide or an equivalent amount of a precursor thereof, heating the coated fiber to form an adherent glass film on the fiber and submitting the coated fiber to a reducing atmosphere at a temperature of from 600° C. to 900° C. to reduce the lead oxide to metallic lead.

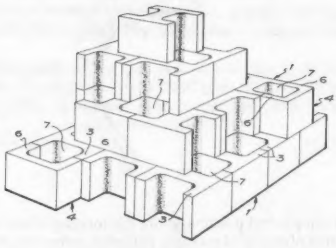
5. A process for preparing a lead matrix composite wherein lead-coated alumina fibers of claim **1** are infiltrated with molten lead and the lead solidified.

4,282,923

REGENERATIVE HEAT EXCHANGE SYSTEMS

Stuart E. Cheetham, Sheffield, England, assignor to GR-Stein Refractories Limited, Sheffield, England

Filed Nov. 15, 1978, Ser. No. 961,045
Int. Cl.³ F28D *17/00*
U.S. Cl. 165—9.1 **5 Claims**



1. A regenerative heat exchange system comprising a multiplicity of refractory members laid in adjacent parallel rows to form one course in the system, each refractory member being so shaped as to provide a central generally web-like portion with flanges towards each end of the generally web-like portion extending to both sides, such that when the refractory members are laid, the flanges on adjacent refractory members abut to form a gas passageway or duct through that first course, the refractory members of an adjacent course being similarly shaped and arranged in parallel rows with the refractory members turned through 90° with respect to the refractory members of the first row and being off-set therefrom, the flanges of adjacent members in each row in the said second course again abutting to form a gas passageway or duct through the adjacent course, each gas passageway or duct in the adjacent course constituting a continuation of a respective gas passageway or duct in the said one course.

4,282,924

APPARATUS FOR MECHANICALLY CLAMPING SEMICONDUCTOR WAFER AGAINST PLIABLE THERMALLY CONDUCTIVE SURFACE

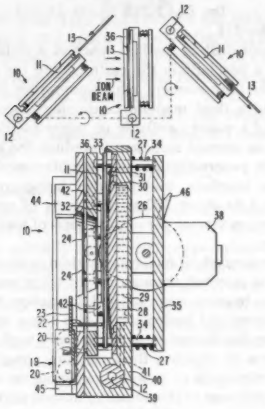
Ronald A. Faretra, Melrose, Mass., assignor to Varian Associates, Inc., Palo Alto, Calif.

Filed Mar. 16, 1979, Ser. No. 21,362
Int. Cl.³ B23Q *3/00*
U.S. Cl. 165—80 E **8 Claims**

1. An apparatus for providing active cooling for semiconductor wafers during implantation in an ion implantation chamber, comprising

a housing incorporating a convexly curved platen, said platen having a coating of a pliable thermally conductive material adhered to the surface thereof;

a clamping ring mounted within said housing in slidable relationship with said convexly curved platen, the travel of said clamping ring ranging between a receiving or eject position wherein said clamping ring and said convexly curved platen define a slot for receiving or rejecting a semiconductor wafer and a locked position wherein a



semiconductor wafer is firmly pressed against said convexly platen by the contact of said clamping ring against said semiconductor wafer at its circumferential edge, said wafer substantially conforming on its back side to the contour of said convexly curved platen;

actuating means for determining the position of said clamping ring with respect to said convexly curved platen; and

active cooling means for transferring thermal energy from said platen.

4,282,925

SCRAPED SURFACE HEAT EXCHANGER

Lloyd F. Hay, Oakdale; Albert F. Rica, and J. R. Webber, both of Stockton, all of Calif., assignors to FranRica Mfg. Inc., Stockton, Calif.

Filed Mar. 26, 1980, Ser. No. 134,266
Int. Cl.³ F28F *5/00*
U.S. Cl. 165—94 **15 Claims**

1. A heat exchanger comprising:

a heat exchange cylinder having an inlet end and an outlet end,

a rotatable element positioned within said heat exchange cylinder and defining therewith a product flow chamber having an inlet end and an outlet end between which product flows in said product flow chamber in heat transfer relation to said heat exchange cylinder,

a thermally insulated jacket surrounding said heat exchange cylinder and spaced therefrom to define a flow chamber for a medium which is in heat transfer relation to said product via said heat exchange cylinder,

a drive shaft connected to said rotatable element, said drive shaft having a longitudinal axis of rotation,

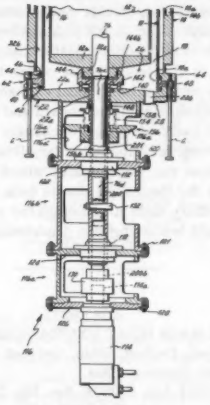
an inlet end closure enclosing said inlet end of said heat exchange cylinder and having a product inlet opening communicating with said inlet end of said product flow chamber, said inlet end closure having a drive shaft opening through which said drive shaft passes,

an outlet end closure enclosing said outlet end of said heat exchange cylinder and having a product outlet opening communicating with said outlet end of said product flow chamber,

a stationary annular seal encircling said drive shaft and mounted to said inlet end closure,

a rotatable annular seal encircling said drive shaft disposed axially inwardly of said stationary seal in sealing relation therewith,

a seal carrier surrounding said drive shaft and mounting said rotatable seal, said carrier being generally axially movable and angularly immovable relative to said drive shaft,



means biasing said carrier axially outwardly relative to said drive shaft to urge said rotatable seal against said stationary seals and thereby preload said seal with a predetermined preload sealing force,

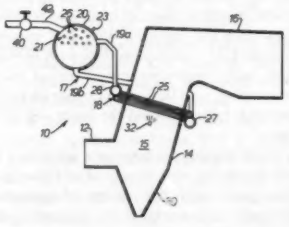
an indicator element extending outwardly from said carrier through said drive shaft opening in said inlet end closure which moves axially with said carrier relative to said drive shaft when said seals wear to provide a visual indication of seal wear.

4,282,926

COOLING OF FLUID STREAMS

Kenneth B. D. Holland, Forestville, Australia, assignor to James Howden and Company Australia Pty. Limited, Australia

Filed Feb. 22, 1979, Ser. No. 14,087
Claims priority, application Australia, Feb. 24, 1978, PD3507/78; Jun. 9, 1978, PD4663/78
Int. Cl.³ F28D *15/00*
U.S. Cl. 165—1 **6 Claims**



1. A method for cooling a gas stream in a manner to provide a time lag between a failure of a cooling fluid supply and a consequent rise in the discharge temperature of the said gas stream comprising:

passing the gas stream through a duct into heat exchange relationship with the liquid phase of a secondary fluid in a primary heat exchanger whereby to vaporize the liquid;

recondensing the vaporized secondary fluid by passing it

through a secondary heat exchanger into heat exchange relationship with a third fluid which is introduced into the secondary heat exchanger at ambient temperature and which exits therefrom without having undergone a phase change;

allowing the secondary fluid to circulate between the primary and secondary heat exchangers substantially without loss of the secondary fluid unless the pressure of the secondary fluid exceeds a predetermined value which is above atmospheric pressure, the secondary fluid being substantially in the vapor phase when passing from the primary to the secondary heat exchanger and being substantially in the liquid phase when travelling from the secondary to the primary heat exchanger;

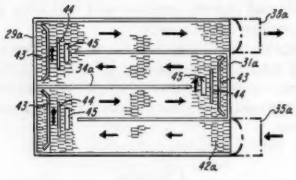
the secondary fluid being so chosen and the rate of condensation in the secondary heat exchanger being so controlled that the pressure of the secondary fluid is normally maintained below the said predetermined value; and, in the event that the third fluid stream fails, venting the vaporized secondary fluid to maintain the pressure of the secondary fluid below the said predetermined value.

4,282,927

MULTI-PASS HEAT EXCHANGER CIRCUIT

Carl E. Simmons, Oxford, Ohio, assignor to United Aircraft Products, Inc., Dayton, Ohio

Filed Apr. 2, 1979, Ser. No. 25,773
Int. Cl.³ F28F *3/02*
U.S. Cl. 165—166 **8 Claims**



1. A plate and fin heat exchanger in which a flowing fluid is compelled to make plural passes through the heat exchanger at least at one level thereof, including

(a) superposing plates at said one level;

(b) marginal plate spacer means defining an internal flow area between said plates having an inlet and an outlet;

(c) at least one divider member positioning intermediately of said spacer means to have an inner end terminating within said flow area and defining with said spacer means and with one another a circuitous flow path between said inlet and said outlet including plural passes paralleling said divider member, said flow path further including a portion of transverse extent around the inner end of said divider member;

(d) and a single continuous layer of a secondary heat transfer material occupying the entirety of said flow area including said flow passes and said portion of transverse extent of said flow path and providing fin-like corrugations approximately parallel to said divider member and extending beyond the said inner end of said divider member to and through said portion of transverse extent of said flow path, said layer being slotted to accommodate said divider member;

(e) and corrugations of said layer being slit at least in the location of said flow path portion of transverse extent to provide for fluid flow transversely of said corrugations in said portion.

4,282,928

METHOD FOR CONTROLLING PERMEABILITY OF SUBTERRANEAN FORMATIONS

Charles J. McDonald, Midland, Mich.; John V. Van Landingham, Sapulpa, Okla., and Steven P. Givens, Midland, Mich., assignors to The Dow Chemical Co., Midland, Mich.

Division of Ser. No. 813,903, Jul. 8, 1977, Pat. No. 4,182,417.
This application Sep. 17, 1979, Ser. No. 76,113
The portion of the term of this patent subsequent to Jan. 8, 1997, has been disclaimed.
Int. Cl.³ E21B *21/00, 33/138*
U.S. Cl. 166—274 **6 Claims**

1. In a well drilling method wherein a drilling fluid is injected into a borehole in the earth during the drilling of the borehole, the improvement which comprises injecting as the drilling fluid a fluid medium containing discrete spheroidal microgels of a water-swellable or water-swollen crosslinked polymer in an amount sufficient to reduce the loss of the drilling fluid via penetration of porous subterranean strata proximate to the borehole, said polymer being crosslinked with from about 5 to about 200 weight parts of copolymerizable polyethylenic monomer per million parts of total monomers of the polymer.

2. In an enhanced oil recovery method in which an aqueous drive fluid is injected through an injection well bore into a hydrocarbon-bearing nonfractured formation having hydrocarbon-deficient and hydrocarbon-rich zones to drive hydrocarbon from the formation to a recovery well, the improvement wherein an aqueous fluid medium containing discrete, spheroidal microgels of a water-swellable or water-swollen, crosslinked polymer of ethylenically unsaturated water-soluble monomer(s) is introduced through the injection well bore into the formation in an amount sufficient to reduce the aqueous fluid permeability of the porous formation, said polymer being crosslinked with from about 5 to about 200 weight parts of copolymerizable polyethylenic monomer per million parts of total monomers of the polymer and said microgels in at least a partially water-swollen state having diameters in the range from about 0.5 to about 200 micrometers, thereby restricting the passage of the drive fluid into hydrocarbon-deficient zones of the formation but not substantially impeding the passage of the drive fluid through hydrocarbon-rich zones of the formation.

4,282,929

METHOD OF CONTROLLING SCALE IN OIL RECOVERY OPERATIONS

Richard W. Krajicek, Houston, Tex., assignor to Carmel Energy, Inc., Houston, Tex.

Filed Jul. 30, 1979, Ser. No. 61,673
Int. Cl.³ E21B *43/24, 43/27*
U.S. Cl. 166—303 **1 Claim**

1. A method of producing heavy viscous petroleum crude oil from a subterranean formation which comprises the steps of:

a burning a sulfur containing fuel with a substantially stoichiometric amount of air in a pressurized combustion chamber to achieve substantially complete combustion of the fuel, in the presence of sufficient injected water to maintain temperatures of from about 590° C. to about 2200° C., to form a combustion gas;

injecting water and ammonia into the combustion gas to produce a thermal vapor stream;

warming downstream piping and a well bore combmunicating with a subterranean deposit of heavy viscous petroleum crude oil, venting a portion of the vapor stream from the well to maintain gas velocity in the well to lift condensed liquids from the well, for a time sufficient to warm the piping, well bore and the subterranean formation adjacent the well bore;

ceasing the venting from the well and reducing the injection of ammonia into the combustion gases and water into the combustion chamber to allow acidic compounds, formed

in the pressurized combustion chamber, to be injected into the subterranean formation through the well bore with the vapor stream whereby the acidic compounds in the vapor stream increase the acidity of the connate water in the formation;

discontinuing the injection of the thermal vapor stream when the formation and oil is heated; and

recovering the petroleum crude oil from the well bore.

4,282,930

PROCESS FOR THE RECOVERY OF PETROLEUM FROM SUBTERRANEAN FORMATIONS

Karl-Heinz Grodde, and Hartwig Volz, both of Celle, Fed. Rep. of Germany, assignors to Deutsche Texaco Aktiengesellschaft, Hamburg, Fed. Rep. of Germany

Filed Mar. 12, 1979, Ser. No. 19,537

Claims priority, application Fed. Rep. of Germany, Mar. 17, 1978, 2811666

Int. Cl.³ E21B *43/22*

U.S. Cl. 166—305 R **4 Claims**

1. In a process for the recovery of petroleum from underground formations by means of a polymer flood employing a salt-sensitive partially hydrolyzed polyacrylamide in soft water, the improvement comprising the injection of a slug of a solution of a salt-insensitive polymer in soft water, immediately prior to the undertaking of said polymer flood, said salt-insensitive polymer being selected from the group consisting of a polysaccharide, a polyacrylamide hydrolyzed from 0% to 15%, and a cellulose ether.

4,282,931

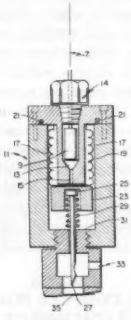
METAL HYDRIDE ACTUATION DEVICE

Peter M. Golben, St. Paul, Minn., assignor to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Jan. 23, 1980, Ser. No. 114,522

Int. Cl.³ A62C *35/02, 37/18;* B67B *7/24*

U.S. Cl. 169—61 **10 Claims**



1. A metal hydride actuation device comprising:

a container having a metal hydride material located therein, said container being constructed to act as a storage medium for the material and capable of allowing any released gases therefrom to freely pass through the container's walls;

means to supply heat to the metal hydride in its container;

a first chamber substantially surrounding the container on all sides and having an expandable volume under the influence of gaseous pressure;

a second chamber substantially surrounding the first chamber and formed by a housing containing a member capable of reciprocal movement;

biasing means in the second chamber to normally maintain the reciprocating member against the first chamber; and

means for actuating the discharge of a triggering medium whereby upon the application of heat to the metal hydride hydrogen gas is liberated from the container to build up a gaseous pressure in the first chamber until the pressure is sufficient to move the reciprocating member from its normal position against the biasing member and thereby cause the means for actuating to trigger the medium.

4,282,932

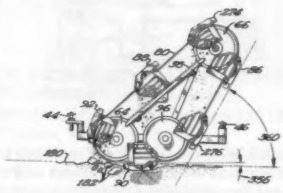
ROCK PICKER

Raymond R. Anderson, Box 218, Ray, N. Dak. 58849

Filed Nov. 1, 1979, Ser. No. 90,317

Int. Cl.³ A01D *19/02;* A01B *17/00*

U.S. Cl. 171—63 **14 Claims**



1. A rock picker comprising:

a plurality of buckets for scraping the ground and having substantial openings which selectively retain rocks of at least a predetermined size in said buckets but which allow soil to exit from said buckets through said openings;

conveyor means for conveying said buckets into, across, and out of the ground and for conveying said buckets such that rocks retained by said buckets may be collected, said conveyor means comprising a cable means which is attached to said buckets and a plurality of guide means for guiding said cable means such that said buckets are conveyed into, across, and out of the ground and are conveyed such that rocks retained by said buckets may be collected, wherein the angle of attack at which said buckets are conveyed across the ground is approximately 4° and wherein said conveyor means conveys said buckets upwardly away from the ground for a substantial distance such that substantially all of the soil scraped into said buckets is caused to fall from said openings in said buckets;

vehicle means for transporting said buckets and said conveyor means across the ground; and

collector means for collecting the rocks retained by said buckets, said collector means being mounted on said vehicle means.

4,282,933

AUTOMATIC CONTROL DEVICE FOR AN EARTH WORKING EQUIPMENT

Takashi Suganami, Fujisawa; Tashiro Takeda, Hiratsuka; Tetsuya Nakayama, Fujisawa; Koh Shimizu, Tokyo, and Teruo Manseki, Fujisawa, all of Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Jun. 7, 1979, Ser. No. 46,179

Claims priority, application Japan, Feb. 2, 1978, 53/11298

Int. Cl.³ A01B *63/111;* E02F *3/76*

U.S. Cl. 172—4.5 **8 Claims**

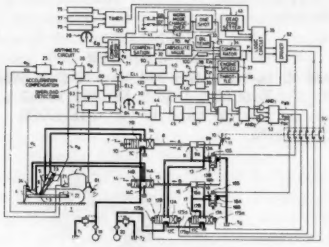
8. An automatic control system for use in earth working equipment of the type which includes a body, a movable frame coupled to the body and a blade carried on the frame, said control system comprising:

inclinometer means for providing at least one inclination signal corresponding to the inclination of the body, wherein said at least one inclination signal includes an unwanted acceleration component caused by movement of the body;

an acceleration compensation arithmetic circuit connected to the inclinometer means for substantially removing said

acceleration component to thereby provide an output signal which is substantially a function of body inclination alone;

detection means for providing an output corresponding to the angle of the frame with respect to the body;



an inclination arithmetic circuit for receiving the outputs of the acceleration compensation circuit and the detection means and for calculating a present inclination angle of the frame with respect to the ground; and

blade control means for controlling the position of the blade in response to the difference between the present inclination angle and a reference value.

4,282,934

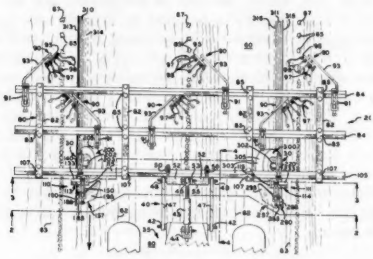
GUIDANCE SYSTEM FOR AGRICULTURAL IMPLEMENTS

Paul A. Bezzerides, P.O. Box 211, Orosi, Calif. 93647

Filed Sep. 4, 1979, Ser. No. 72,447

Int. Cl.[3] A01B *69/00*

U.S. Cl. 172—26 **3 Claims**



3. A guidance system for agricultural implements comprising:

A. a frame;

B. means for mounting the frame for earth traversing movement in a direction of travel and limited lateral adjustment;

C. a pair of scraper blades mounted on the frame spaced from each other transversely of said direction of travel for scraping earth engagement and said blades having corresponding edges inclined substantially transversely of the direction of travel from corresponding lower ends to corresponding upper ends oppositely outwardly spaced from the lower ends to form spaced, substantially parallel first and second tracks during said scraping earth engagement inclined upwardly and outwardly transversely of the direction of travel; and

D. a pair of wheels mounted on the frame for rolling earth engagement spaced from each other transversely of the direction of travel and individually in trailing relation with respect to the direction of travel to the scraper blades of said pair and said wheels mounted on the frame for rotational movement about individual axes of rotation individually substantially parallel to the tracks formed by the scraper blades with respect to which they are in trailing relation so as to dispose said wheels in inclined attitudes in individual outward engagement with said tracks resisting said lateral adjustment of the frame to guide said earth traversing movement thereof.

4,282,935

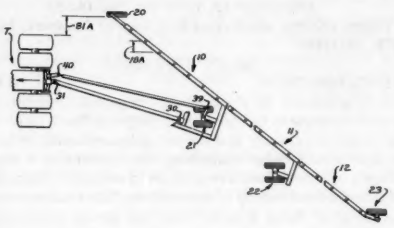
MULTIPLE SECTION, ADJUSTABLE WIDTH PLOW

William J. Dietrich, Congerville, Ill., assignor to DMI, Inc., Goodfield, Ill.

Filed Sep. 18, 1979, Ser. No. 76,588

Int. Cl.[3] A01B *69/00, 69/08, 63/22*

U.S. Cl. 172—284 **10 Claims**



1. An adjustable width plow adapted to be pulled by a tractor comprising a forward section, an intermediate section and a rear section, each including a frame; means for connecting adjacent ends of said frames of said sections together for relative pivotal motion about horizontal axes; a plurality of plow units on said frame of each of said sections, said units being connected together and mounted for rotation about respective vertical axes in unison; first support wheel means for supporting said frames adjacent the rear end of said first section and adapted to run on unplowed land; first steering means for steering said first support wheel means in response to the turning of said tractor, said steering means being further responsive to the setting of the cutting width of said plow units for adjusting said first support wheel means to steer in the proper direction under plowing operation at the adjusted width setting of the plow units; second support wheel for supporting said frames adjacent the rear end of said intermediate section and adapted to run on unplowed land and including means for turning said second support wheel means in response to the setting of the cutting width of said plow units but not in response to the turning of said tractor; and support caster wheel means for supporting said frames.

4,282,936

QUICK ACTING COUPLER FOR CULTIVATOR ATTACHMENT

Daniel M. Zuhone, and Mark S. Coleman, both of R.R. 4, Mattoon, Ill. 61938

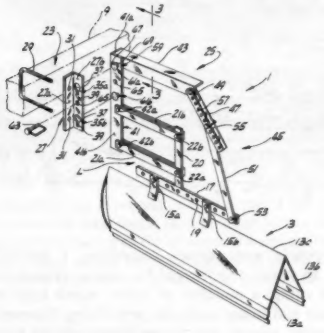
Filed Jun. 20, 1979, Ser. No. 50,460

Int. Cl.[3] A01B *39/26*

U.S. Cl. 172—512 **10 Claims**

1. A system for easily and quickly coupling and uncoupling a cultivator attachment, such as a cultivator shield or fender, to a cultivator, the latter including a cultivator frame adapted to be hitched to a tractor or other prime mover for movement of the cultivator through a field to be cultivated, said cultivator frame including a generally horizontal tool bar extending transversely of the direction of travel of the prime mover substantially the entire width of said cultivator, said coupling system comprising a hitching member adapted to be securely fastened to said tool bar at any desired location therealong for attachment of said cultivator attachment to said tool bar at any desired position along said tool bar, a mounting frame for said

cultivator attachment, said mounting frame including a vertical member having a vertical portion thereof adapted to be disposed relative to said hitching member for securement of said cultivator attachment to said cultivator frame, and quick acting fastening means for the ready securement of said hitching member and said vertical member together and for the ready uncoupling thereof, said fastening means comprising pin and slot fastener means including a headed pin extending in generally transverse direction from either said vertical member or from said hitching member, said headed fastener having a shank and an enlarged head on said shank with said head being spaced from the member on which said pin is secured, the



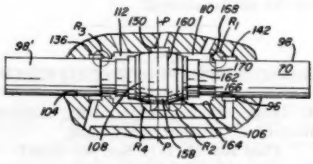
other of said members having a lot therein for reception of said headed fastener, said slot including an enlarged portion for reception of said head and a narrower portion for receiving said shank, further, said hitching member and said vertical member each having a hole therethrough, these last-said holes being in register with one another when said headed fastener is received in said slot, and a removable fastener insertable through said holes whereby upon said headed fastener being inserted in its respective slot and upon said removable fastener inserted through its respective holes, said cultivator attachment is rigidly secured to said tool bar at said desired position therealong.

4,282,937

HAMMER

George A. Hibbard, Claremont, N.H., assignor to Joy Manufacturing Company, Pittsburgh, Pa.

Continuation of Ser. No. 680,822, Apr. 28, 1976, abandoned.
This application Jun. 25, 1979, Ser. No. 51,928
Int. Cl.³ B25D *9/00*
U.S. Cl. 173—1 **31 Claims**



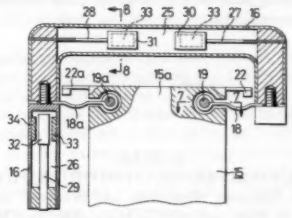
1. A hydraulic drive for actuating a tool structure comprising: a body member having an elongated bore therein with one end of said bore being adapted to receive at least a portion of an actuatable tool structure internally thereof, an elongated piston axially reciprocal within said bore to deliver impact blows to such a tool structure, said bore having an intermediate axially extending formed portion, said piston having an axially intermediate head portion cooperable with said formed portion to define chamber portions within said bore on axially opposite sides of said head portion which chamber portions vary inversely in volume as said piston reciprocates, first passageway means in said body member having hydraulic fluid flow through portions thereof controlled by said piston upon reciprocation thereof to provide for selective admission of hydraulic fluid to said chamber portions, and second passageway means in said body member having fluid flow communication alternately with said chamber portions controlled by said head portion of said piston during reciprocation thereof to provide at least substantially continuous discharge of hydraulic fluid from said chamber portions.

4,282,938

VIBRATION INSULATION DEVICE FOR HANDLE OF VIBRATORY MACHINE

Makoto Minamidate, Miura, Japan, assignor to Yokosaka Boat Kabushiki Kaisha, Yokosuka, Japan

Filed Dec. 13, 1978, Ser. No. 968,980
Claims priority, application Japan, Mar. 25, 1978, 53/34393
Int. Cl.³ E21B *3/00*
U.S. Cl. 173—162 H **10 Claims**



1. In a vibratory machine in which a unidirectional vibration is caused by a vibration source in a direction perpendicular to the longitudinal direction of a handle of said machine, said handle having a grip, a device for insulating said handle from said vibration comprising:

a spring interposed between the vibration source and said handle, for free displacement in the direction of said vibration;

a dynamic vibration absorber including a conductive weight plate suspended in a cavity formed in the grip of said handle so as to be adapted to float along the direction of said vibration and extending in the same direction as said vibration, and a pair of permanent magnets disposed in said cavity and adapted to produce a magnetic field acting at a right angle to said plate.

4,282,939

METHOD AND APPARATUS FOR COMPENSATING WELL CONTROL INSTRUMENTATION FOR THE EFFECTS OF VESSEL HEAVE

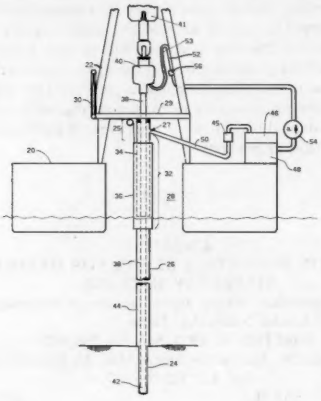
L. Donald Maus; Jerry M. Speers, both of Houston, Tex., and James D. Howell, Gretna, La., assignors to Exxon Production Research Company, Houston, Tex.

Filed Jun. 20, 1979, Ser. No. 50,351
Int. Cl.³ E21B *7/12*
U.S. Cl. 175—7 **19 Claims**

1. A method for determining the flow of a drilling fluid during a floating drilling operation having a marine riser and a telescoping section, said method comprising:

determining a reference position on the telescoping section; and

measuring the volume of drilling fluid flowing from said telescoping section during the time period in which said



telescoping section moves away from and back to the reference position.

4,282,940

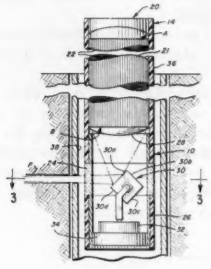
APPARATUS FOR PERFORATING OIL AND GAS WELLS

Winfield W. Salisbury, Scottsdale, and Walter J. Stiles, Phoenix, both of Ariz., assignors to Magnafrac, Fort Worth, Tex. Division of Ser. No. 894,261, Apr. 10, 1978, Pat. No. 4,199,034.

This application Sep. 11, 1979, Ser. No. 74,497

Int. Cl.[3] E21B *7/00*

U.S. Cl. 175—11 **3 Claims**



1. Apparatus for increasing the recovery flow from a bore hole casing of an oil or gas well by projecting a flow hole through the casing and through adjoining subsurface formations at a selected depth, the apparatus comprising surface mounted laser generator means for generating a high-powered coherent light beam, transmitting means including a fiber optics cable having a bundle of fibers of internal refracting transparent material disposed in distributed relation within the casing for transmitting the beam in an axial path following relation through the casing from the top thereof to the selected depth therein, and beam control means within the casing at said depth for laterally deflecting the beam for focusing the deflected beam to project a flow hole laterally through the casing and the adjoining subsurface formations.

4,282,941

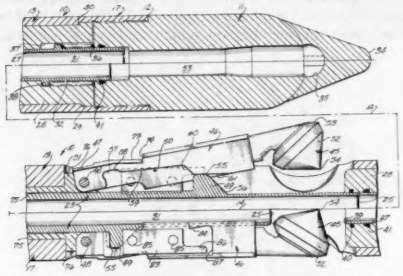
UNDERREAMER WITH LARGE CUTTER ELEMENTS AND AXIAL FLUID PASSAGE

Gregg S. Perkin, Redondo Beach, Calif., assignor to Smith International Inc., Newport Beach, Calif.

Filed Apr. 18, 1979, Ser. No. 31,170

Int. Cl.[3] E21B *9/26*

U.S. Cl. 175—267 **26 Claims**



1. A borehole underreamer comprising a tubular body adapted at an upper end thereof for coaxial connection to a rotary drill string, a plurality of cutter means support arms having upper and lower ends, the arms being disposed at selected locations around the circumference of the body at a selected point therealong and being mounted at their upper ends for pivotal motion relative to the body between (a) retracted positions in which the arms are disposed essentially within the outer diameter of the body and (b) opened positions in which the arm lower ends are disposed a selected distance outwardly of the exterior of the body, cutter means mounted to the lower end of each arm and configured to extend essentially to the center of the body when the arm is in its retracted position, actuator means in the body selectively operable for moving the arms from their retracted to their opened positions, the actuator means including an open ended tubular element movable downwardly in the body coaxially thereof during operation of the actuator means from (a) an upper position wherein the lower end of the element is disposed above the locations occupied by the cutter means in the retracted positions of the arms to (b) a lower position wherein the lower end of the element is disposed below said cutter means locations, the body having a fluid flow passage therealong comprised of upper and lower axial passage sections respectively above and below said cutter means retracted positions, the lower passage section including means engageable with the lower end of the tubular element in the lower position of the element for connecting the passage upper and lower sections in fluid flow relation via the tubular element.

4,282,942

UNDERREAMER WITH PORTED CAM SLEEVE UPPER EXTENSION

Thomas L. Longmore, Long Beach, Calif., assignor to Smith International Inc., Newport Beach, Calif.

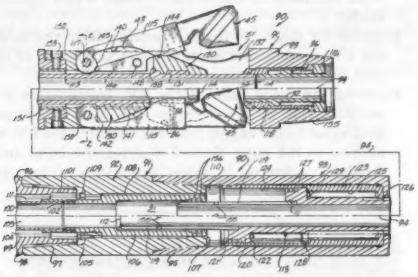
Filed Jun. 25, 1979, Ser. No. 51,684

Int. Cl.[3] E21B *10/33*

U.S. Cl. 175—269 **14 Claims**

12. A borehole tool having an axial liquid flow passage therealong and operable between actuated and unactuated states, the tool comprising an actuator including an axially movable tube defining at least a portion of the passage and having limits of travel corresponding to the actuated and unactuated states of the tool, an annular piston chamber formed about the tube so that a portion of the tube defines the inner wall of the chamber, said piston being driven by piston driving fluid, an annular piston movable with the tube and disposed in

the piston chamber, seal means cooperating with the exterior of the tube, fluid flow ports through the tube, the seal means and the ports being so disposed relative to each other and to the tube limits of travel that the seal means close the ports from the piston chamber when the tube is at its limit corresponding to the unactuated state of the tool and the ports are open to the



piston chamber for diverting at least some of the driving fluid directly into the axial liquid flow passage, when the tube is at its limit corresponding to the actuated state of the tool, the tool also comprising means for communicating piston driving fluid to the piston chamber in at least the unactuated state of the tool.

4,282,943

LAWN AERATOR

Joseph Leitner, 1868 Del Mar Ave., Redding, Calif. 96003

Filed May 23, 1979, Ser. No. 41,543
Int. Cl.³ E21B *10/44*
U.S. Cl. 175—394 **1 Claim**

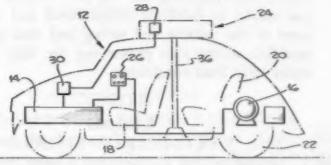
1. An aerator comprising a solid elongate shaft terminating at one end in an imperforate drilling portion integral with said shaft, said elongate shaft having a length substantially greater than the length of said drilling portion, the other end of said elongate shaft adapted to be mounted in an associated electric drill to permit a person standing erect to insert said drilling portion into the ground, said drilling portion having a substantially helical configuration forming a single spiral flight to provide a plurality of shelf portions, said drilling portion having a horizontally disposed, outwardly flaring end portion of triangular shape terminating in a pointed tip which forms a small portion of a shelf portion, said end portion being provided with a radially extending cutting edge for cutting into soil or the like for movement of the soil upwardly on said shelf portions during the rotation of said elongate shaft by said associated electric drill whereby when said drilling portion is removed from the ground, a substantially cylindrical void is provided without undue soil compaction.

4,282,944

WIND POWER SYSTEM

J. Walter Trumpy, 14820 Sunset Blvd., Pacific Palisades, Calif. 90272

Filed May 22, 1979, Ser. No. 41,488
Int. Cl.³ B60L *11/18*
U.S. Cl. 180—2 A **15 Claims**



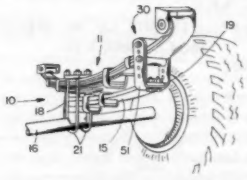
1. A wind motor comprising:
a central vertically extending rotatable main shaft;
three generally rectangular vanes;
means for mounting said vanes equidistant around said shaft to rotate both about separate axes parallel to the axis of said vertical shaft and also to rotate together about said shaft;
means including cranks secured to rotate with each vane and linkages rigidly interconnecting said cranks in a triangular configuration, for rotating said vanes in unison; and
means for orienting each of said vanes to be perpendicular to the incident wind when the axis of each said vane is at a point on a line extending through said main shaft and also extending perpendicular to the direction of the incident wind, said orienting means including means for fully restraining against the unbalanced forces applied to said system when it is in the optimum orientation relative to the wind as defined hereinabove.

4,282,945

SUSPENSION MODIFYING DEVICE FOR LEAF SPRING SUSPENSIONS

Robert L. Bessey, Alto, Mich., assignor to Grand Rapids Spring Service Co., Grand Rapids, Mich.

Filed Jan. 31, 1980, Ser. No. 117,102
Int. Cl.³ B60G *11/10*
U.S. Cl. 180—71 **5 Claims**



2. A combination traction bar, chassis lifting and suspension modifying device for four-wheel drive heavy duty vehicles having leaf spring suspensions comprising:
a longitudinally extending beam adapted to be clamped below a vehicle leaf spring, between the vehicle leaf spring and axle of a vehicle for lifting the chassis of the vehicle, said beam having first and second longitudinally opposed ends, said first end of said beam being clamped between the vehicle leaf spring and axle of the vehicle;
means for engaging the vehicle leaf spring disposed on said second end of said beam to prevent wrap-up of the vehicle

axle about the vehicle leaf spring during rapid acceleration or deceleration;

said beam comprising a plurality of longitudinally extending flexible leaf spring members for stiffening the spring rate of the vehicle leaf springs during large suspension deflections;

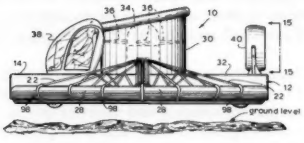
said means for engaging the vehicle leaf spring comprising a bifurcated member secured to said second end of said beam, said bifurcated member having first and second upstanding ends encompassing the sides of the vehicle leaf spring and first and second vertically spaced elastomer rollers encompassing the top and bottom of the vehicle leaf spring to facilitate longitudinal and vertical movement of the vehicle leaf spring and thus provide an unmodified spring rate preserving the ride of the vehicle under light load conditions.

4,282,946

MULTI-TERRAIN VEHICLE

John C. MacGuire, 201 E. Ninth St., Casper, Wyo. 82601

Filed Jun. 26, 1979, Ser. No. 52,323
Int. Cl.³ B60V *3/02*
U.S. Cl. 180—128 **11 Claims**



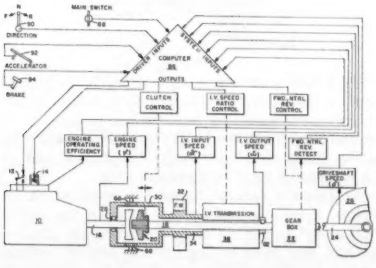
1. A multi-terrain vehicle for use over a variety of terrain having a body portion, means associated with said body portion for said vehicle to be in moving contact with the surface of said terrain and means for permitting said vehicle to remain above the surface of said terrain comprising a flexible portion for causing fluid to impinge upon the surface of said terrain and means for extending and folding said flexible portion, said flexible portion including rigid members and said means for extending and folding said flexible portion comprising vertical pivot means for rotatably connecting said rigid members to said body portion to permit said rigid members to be rotated in a substantially horizontal plane about said vertical pivot means.

4,282,947

HYBRID VEHICULAR POWER SYSTEM AND METHOD

Yves J. Kemper, Birmingham, Mich., assignor to Vadetec Corporation, Troy, Mich.

Filed May 11, 1978, Ser. No. 904,776
Int. Cl.³ B60K *9/00*
U.S. Cl. 180—165 **20 Claims**



1. The method of propelling a vehicle having an engine, an energy storing flywheel, a drivewheel and an I.V. transmission having a range of input/output speed ratios variable from a minimum in which output speed is reduced relative to input speed to a maximum, said method comprising the steps of:

coupling the engine to the flywheel and the input of the I.V. transmission to drive the I.V. transmission input at engine speeds;

coupling the output of the I.V. transmission to the drivewheel and varying the speed ratio of the I.V. transmission from minimum to maximum to effect a first operational mode;

coupling the engine to the drivewheel and to the output of the I.V. transmission to initiate a second mode of operation; and

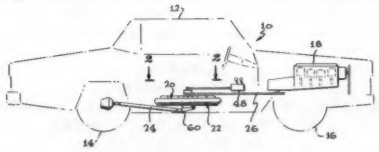
adjusting the speed ratio of the I.V. transmission in said second mode of operation to feed back excess power developed by the engine from the output of the I.V. transmission to the input thereof to drive the input and the flywheel at speeds to store the energy of said excess power.

4,282,948

MOTOR VEHICLE PROPULSION SYSTEM

George A. Jerome, 8413 Fullbright Ave., Canoga Park, Calif. 91306

Filed Aug. 1, 1979, Ser. No. 62,673
Int. Cl.³ B60K *9/04*
U.S. Cl. 180—165 **12 Claims**



1. A motor vehicle propulsion system comprising:

a motor vehicle, wheels on said motor vehicle for supporting, guiding and propelling said motor vehicle, an engine on said motor vehicle, said propulsion system interconnecting said engine and said propelling wheels, said propulsion system comprising two flywheels mounted on said motor vehicle for rotation in opposite directions about a flywheel axis, said engine being connected to rotate said flywheels, said flywheels having liquid therein, said axis being substantially vertical in said vehicle;

a turbine positioned adjacent said flywheels for rotation on said axis, at least one nozzle mounted on at least one of said flywheels and interconnecting such flywheel and said turbine, said turbine being connected to said propelling wheels so that liquid in said nozzled flywheel having kinetic energy by reason of rotation of said flywheel by said engine can be discharged through said nozzle to said turbine to impart kinetic energy to said turbine and through said propelling wheels to said motor vehicle so that kinetic energy of said nozzled flywheel is converted to kinetic energy of vehicle motion, and liquid delivery from said nozzled flywheel to said nozzle to said turbine is controlled by a motor vehicle operator.

4,282,949

HUB LOCKS FOR INDEPENDENTLY SUSPENDED WHEELS

Leonard F. Kopich, Madison Heights, and James A. Steele, Brighton, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 29, 1979, Ser. No. 89,189
Int. Cl.³ B60K *17/30;* **F16D** *11/04*
U.S. Cl. 180—252 **2 Claims**

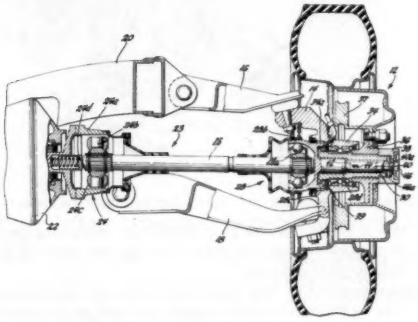
1. A hub lock for a vehicle wheel which is rotatably mounted on an independently suspended hub and selectively

driven by a variable length drive axle which accommodates suspension travel and which has a telescopic universal joint of low end motion resistance at an inboard end connecting the drive axle to a drive device fixed on the vehicle frame,

said hub lock comprising:

a first positive clutch part which is connected to the vehicle wheel and which is journalled in the independently suspended hub in an axially fixed relationship,

a second positive clutch part which is connected to a universal joint housing at an outboard end of the variable length drive axle and which is engageable with the first part for drivingly connecting the drive axle and the vehicle wheel,



said universal joint housing being slidably mounted in the hub for movement between a first position where said hub lock parts are disengaged and a second position where said hub lock parts are engaged,

spring means extending the drive axle and biasing the universal joint housing in the first position where the clutch parts are disengaged and

fluid motor means for retracting the drive axle and moving the universal joint housing to the second position where the clutch parts are engaged.

4,282,950

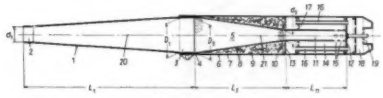
MUFFLER

Peter Fuchs, Grenzstrasse 8, Köflach-Pichling, Austria (A-8581)

Filed Sep. 6, 1979, Ser. No. 72,942

Int. Cl.³ F01N *1/10*

U.S. Cl. 181—257 **19 Claims**



1. A muffler for use in conjunction with an internal combustion engine for reducing the noise level of exhaust gases emitted by the engine, the muffler comprising an elongated diffusor having the shape of a truncated cone, a smaller diameter defining an upstream end of the diffusor and a larger diameter defining a downstream end of the diffusor; a frustoconically shaped, perforated shell having an upstream, large diameter end coupled to the downstream end of the diffusor and a downstream, smaller diameter end, the shell including perforations; a generally cylindrical conduit having a first end attached to the downstream end of the shell, extending from the shell in a downstream direction, and including an opening adjacent a second end of the conduit; a housing surrounding the shell and the conduit and extending from the diffusor to a discharge end of the muffler; a sound absorbing material disposed between the shell and the housing; a baffle disposed within the housing to seal the opening and an annular space between the conduit and the housing from the discharge end and at least one tube oriented substantially parallel to the conduit, extending past the baffle and having a first, intake end proximate the first end of the conduit and a second, outlet end, communicating with the discharge end so that exhaust gas entering the diffusor can travel through the conduit tube, the opening therein, the annular space and thereafter through the tube to the discharge end of the muffler.

4,282,951

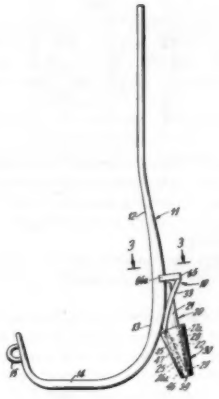
GAFF GUARD FOR LINEMEN'S CLIMBERS

Ronald P. Zelins, Rockaway, Township, Morris County, N.J., assignor to Western Electric Company, Inc., New York, N.Y.

Filed Jun. 26, 1980, Ser. No. 163,111

Int. Cl.³ A63B *27/02*

U.S. Cl. 182—221 **7 Claims**



1. A guard for the gaff of a lineman's climber having a leg iron to which said gaff is secured, said guard comprising a body of synthetic resinous material having parts comprising,

(a) a scabbard having a longitudinally elongated hollow interior for receiving the point of said gaff,

(b) a clip adapted to straddle transversely opposite sides of said leg iron at a location above said gaff and to there attach by a snap-on action to said leg iron, said clip comprising an arm longitudinally spaced from and disposed transversely of said scabbard, a pair of prongs joined to said arm on transversely opposite sides of the centerline of said interior and projecting rearward from said arm, and a pair of tabs each joined rearward of said arm to a respective one of said prongs and projecting therefrom inwardly towards each other to be disposed to make contact with the back face of said leg iron upon attachment thereto of said clip, and

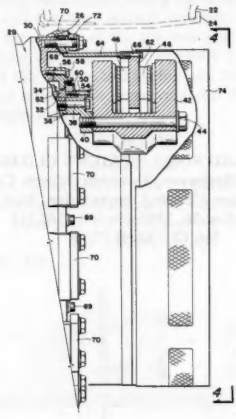
(c) a resilient stem coupling said clip and scabbard together in fixed spatial relation when said stem is resiliently unstressed, said stem being connected to said arm by a junction thereof and to said scabbard by a junction of said arm and scabbard inwards of the outer side of said scabbard, and said junctions being transversely offset to the same side from said centerline to permit said stem to extend between said clip and scabbard to one transverse side of the base of said gaff.

4,282,952

WHEEL ASSEMBLY

Francis A. Bartley, Tulsa, Okla., assignor to Paccar Inc., Bellevue, Wash.

Continuation-in-part of Ser. No. 846,926, Oct. 31, 1977, abandoned. This application May 18, 1979, Ser. No. 40,419
Int. Cl.³ F16D 55/22
U.S. Cl. 188—18 A **19 Claims**



1. An improved wheel assembly for large, off-highway vehicles or the like comprising a wheel having a central non-rotatable housing section and a radially outer rotatable wheel section including a rotatable outer hub and a wheel rim, said assembly comprising:

drive means mounted on said central non-rotatable housing section for transmitting driving forces to said outer wheel section;

brake caliper means mounted on said central housing section and disposed radially outwardly from the axis of rotation of said outer wheel section, said caliper means opening radially outwardly from said axis of rotation;

carrier means mounted on said outer hub section between said central non-rotatable housing section and said wheel rim; and

an annular brake disc supported by said carrier means and operably disposed within and radially outwardly of said brake caliper means,

said brake caliper means being positioned to contact said brake disc proximate the maximum radius thereof.

4,282,953

EMERGENCY OVERSPEED BRAKE

R. D. Lichti, Lakewood, and Howard Reimel, Rancho Palos Verdes, both of Calif., assignors to Park Mobile, Inc., New York, N.Y., by said Howard Reimel

Filed Mar. 2, 1979, Ser. No. 16,820
Int. Cl.³ B60T 7/12
U.S. Cl. 188—189 **29 Claims**

1. A dual action overspeed safety brake for a shaft rotatable in either direction in said brake comprising:

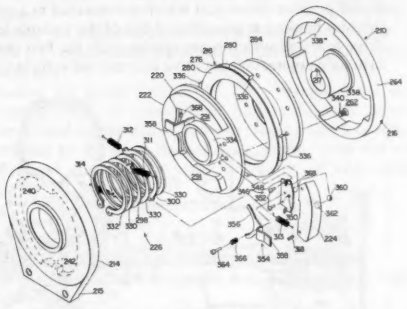
stop means mountable on a stationary base extending radially inwardly therefrom in the direction of the shaft for providing at least a contact surface for each of the two directions of shaft rotation;

brake means operatively connectable to the shaft for the braking thereof;

at least one elongate pawl rotatable when the shaft is rotating and having a leading end and a trailing end, depending upon the direction of shaft rotation;

restraining means for preventing said pawl trailing end from travelling completely radially outwardly in response to centrifugal force;

mounting means for mounting said pawl so as to permit outward radial movement of both said pawl ends in response to centrifugal force such that said leading end engages the contact surface corresponding to the direc-



tion of rotation and so as to permit said restraining means to prevent the complete outward radial movement of said trailing pawl end; and

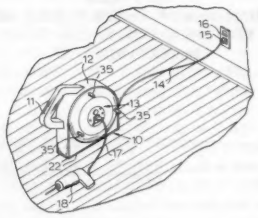
means coupled to said brake means for transmitting the braking force from said engagement of said pawl with said stop means to said brake means, thereby braking the rotation of the shaft.

4,282,954

REWINDER DEVICE

John O. Hill, 545 N. James St., Hazelton, Pa. 18201

Filed Feb. 11, 1980, Ser. No. 120,704
Int. Cl.³ H02G 11/02
U.S. Cl. 191—12.4 **16 Claims**



1. A hand reel for electrical extension cord comprising:

a central, enclosed casing defining a hollow circular center,

a spool means for holding electrical extension cord comprised of circular hubs, said hubs having bearing surfaces fitted for rotation in opposed exterior ends of said casing center, and spool portions, said spool portions being integrally formed on said hubs and extending interiorly of said casing and said spool portions having mating inner surfaces for joining together within said casing,

means for mounting electrical receptacles on said hubs at opposed ends of said spool,

means for connecting said electrical receptacles with electrical extension cord contained in said spool means,

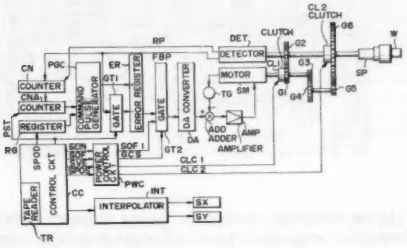
a first handle means formed on said central cylindrical casing, and

second handle means extending outward from each of said hub portions for rotating said spool means.

4,282,955
ROTARY SHAFT CONTROL SYSTEM

Kanryo Shimizu, Tokyo, and Kengo Kobayashi, Kawasaki, both of Japan, assignors to Fujitsu Fanuc Limited, Japan

Filed Apr. 30, 1979, Ser. No. 34,601
Claims priority, application Japan, May 2, 1978, 53-52992
Int. Cl.[3] F16D *21/00;* **B60K** *41/02*
U.S. Cl. 192—0.096 **7 Claims**



1. A rotary shaft control system for rotating and positioning a rotary shaft at a commanded position with one motor, comprising:

two rotation transmission mechanisms of different ratios provided between the motor and the rotary shaft;

means for selectively activating one of said two rotation transmission mechanisms;

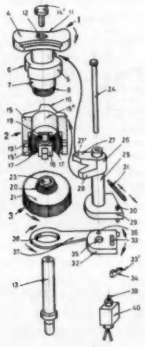
a rotational position detector, for generating a pulse feedback signal, coupled to the rotary shaft;

feedback means for receiving said pulse feedback signal and for providing a control signal to the motor, wherein the rotary shaft is positioned at the commanded position in accordance with said pulse feedback signal from the rotational position detector irrespective of which one of the two rotation transmission mechanisms is used.

4,282,956
RACKING MECHANISM FOR BOBBIN MACHINE

Juan C. Miro, Santa Maria de Barbara, Spain, assignor to Industria Española de Manufacturas Especiales, S.A. (IEMESA), Sabadell, Spain

Continuation-in-part of Ser. No. 869,033, Jan. 6, 1978, Pat. No. 4,232,769. This application Jun. 22, 1979, Ser. No. 51,211
Claims priority, application Spain, Jan. 8, 1977, 454.896; Jun. 29, 1978, 471.249; May 18, 1979, 480.682
Int. Cl.[3] F16D *67/00;* **F16H** *57/10*
U.S. Cl. 192—4 R **15 Claims**



1. A bobbin-racking mechanism for a jacquard machine, said mechanism comprising:

a support;

a drive gear rotatable on said support above a drive axis and supporting an input gear and an eccentric cam;

a transmission member rotatable on said support independent of said drive gear about said drive axis;

an output member connectable to a bobbin and rotatable on said support independent of said drive gear and transmission member about said drive axis;

an output gear fixed to said output member and spaced from said drive gear;

a transmission gear rotatable on said transmission member about a transmission axis transverse to said drive axis and simultaneously meshing with said input gear and said output gear, whereby on rotation of said transmission member said transmission gear orbits about said drive axis;

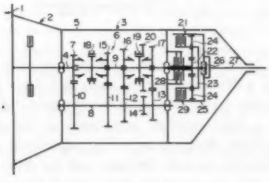
operator means selectively engageable with said members; and

coupling means arranged between said cam and said operator means for displacing the latter between a stopping position preventing rotation of said output member and permitting rotation of said transmission member and a racking position permitting rotation of said output member and preventing rotation of said transmission member.

4,282,957
SUB-TRANSMISSION CONTROL SYSTEM FOR PROVIDING ENGINE BRAKING

Hiroshi Sugimoto, Aichi, and Jiro Nakano, Okazaki, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Aug. 29, 1979, Ser. No. 70,696
Claims priority, application Japan, Oct. 9, 1978, 53-124382
Int. Cl.[3] B60K *41/20;* **F16H** *37/00*
U.S. Cl. 192—9 **4 Claims**



1. In a vehicle which comprises:

an engine for supplying rotary power,

a transmission connected to the engine and having a plurality of speed stages,

a sub-transmission connected in series with the transmission to receive rotary power from the engine to drive the vehicle, the subtransmission including a higher speed stage for providing a first gearing ratio from its input to its output, and a lower speed stage for providing a second gearing ratio lower than the first gearing ratio,

and a braking system for generating a braking signal when operated;

a sub-transmission control system which includes:

a main control system for automatically controlling the shifting of the sub-transmission between said higher and said lower speed stages depending on ongoing sensed operating parameters of the vehicle; and

a sub-control system for receiving said braking signal, said sub-control system including means for measuring the duration of said braking signal, means for determining if said measured duration exceeds a first predetermined time, and means for generating an engine braking shiftdown signal only after said determination that said braking signal has continued for more than said first predetermined time;

said engine braking shiftdown signal being supplied to said main control system to control said main control system to

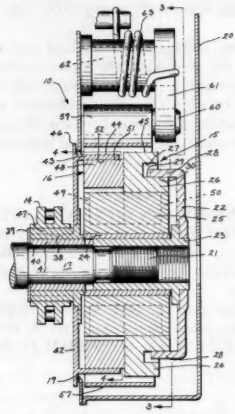
shift the sub-transmission positively into the lower speed stage.

4,282,958

DRIVE TRANSMISSION

Hugh A. Zindler, Rte. #3, Pleasant Valley La., Watertown, Wis. 53094

Filed Sep. 13, 1979, Ser. No. 75,127
Int. Cl.³ B60K *41/24*
U.S. Cl. 192—17 R **5 Claims**



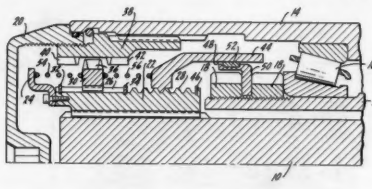
1. In a drive transmission, rotatable coaxial drive and driven members, a drum carried on each said drive and driven member with the circumferential drum flanges disposed in facing relation, a hub member intermediate the drive and driven drums, a first clutch comprising segmental clutch shoes disposed between the hub member and the drive drum, means for effecting movement of the first clutch shoes into engagement with the drive drum to drivingly clutch the hub member to the drive drum with a relatively high energizing force, said first segmental clutch shoes projecting radially outward beyond the driven drum in their clutch engaged position, a second clutch comprising segmental clutch shoes disposed between the hub member and the driven drum, spring means biasing the second segmental clutch shoes toward disengagement from the driven drum with the biasing force of said spring means being overcome by centrifugal force above a predetermined speed to drivingly clutch the hub member to the driven member with a generally lower energizing force than experienced at said first clutch to provide for clutch slippage due to excessive loading at the driven member clutch connection and thereby generally preclude slippage at the drive member clutch connection, a braking surface on the outer periphery of the first segmental clutch shoes, a brake band extending peripherally around the first segmental clutch shoes and the drum flange on said driven member, said brake band being movable between an expanded condition wherein the brake band is spaced radially outward relative to the first segmental clutch shoes and the drum flange of said driven member and a contracted condition wherein the brake band serially engages first with the braking surface on said first segmental clutch shoes to displace the shoes inwardly out of clutching engagement with the drive drum and then engages with the drum flange of the driven member to stop rotation of the driven member without interrupting the rotation of the drive member, and means to move the brake band.

4,282,959

AUTOMATIC CLUTCH

Julian Schachner, Chicago, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Sep. 4, 1979, Ser. No. 72,508
Int. Cl.³ F16D *11/04*; B60K *17/34*
U.S. Cl. 192—35 **8 Claims**



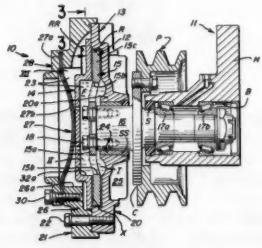
1. An automatic clutch for effecting engagement between rotatable driving and driven members in response to rotation of said driving member, said driving member including means defining straight and helical splines, said clutch comprising first and second clutching means respectively rotatable with said driving and driven members, said first clutching means being axially movable relative to said driving member to first and second positions respectively out of and in clutching engagement with said second clutching means, said first clutching means being guided in its axial movement by said straight spline, means biasing said first clutching means for axial movement to its first position in the absence of rotation of said driving member, and means for moving said first clutching means axially to its second position, said moving means including an actuator rotatable with and axially movable relative to said driving member, said actuator being guided in its axial movement by said helical spline, means tending to retard rotation of said actuator thereby effecting said axial movement of said actuator relative to said driving member, and means coupling said actuator with said first clutching means for effecting said axial movement of said first clutching means to its second position in response to said axial movement of said actuator.

4,282,960

VISCOUS FLUID CLUTCH

Richard E. Glasson, and Jerre F. Lauterbach, both of Columbus, Ind., assignors to Cummins Engine Company, Columbus, Ind.

Filed Jun. 8, 1979, Ser. No. 46,942
Int. Cl.³ F16D *35/00, 43/25*
U.S. Cl. 192—58 C **6 Claims**



1. A viscous fluid clutch comprising first and second drive members mounted for rotation about a common axis, said second drive member being provided with an internal chamber for a predetermined volume of viscous fluid, said first drive member being disposed in said chamber; a third drive member disposed within said chamber and intermediate said first drive member and a chamber-forming wall of said second drive member, said third drive member being rotatable as a unit with

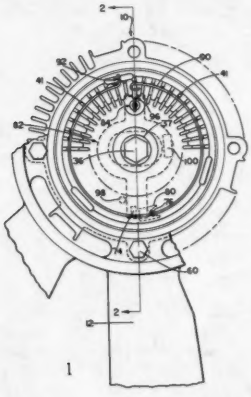
said second drive member and movable axially independently of said second drive member, corresponding surfaces of said first and third drive members forming therebetween an annular fluid shear space concentric with the rotary axis of said drive members; and a thermal-responsive membrane mounted on and forming a part of said chamber-forming wall of said second drive member and rotatable as a unit with said second and third drive members, said membrane having a segment thereof engagable with said third drive member and independently movable axially of said first drive member in response to predetermined ambient temperature changes, axial movement of said membrane segment effecting corresponding axial movement of said third drive member, and varying the configuration of said shear space; all of said members being adapted to rotate as a unit when said first and third drive members are in closest axial proximity and the annular fluid shear space is substantially filled with the viscous fluid.

4,282,961

FAN DRIVE WITH TORQUE TRANSMITTING DEVICE

Charles S. Roscoe, Battle Creek, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed Aug. 30, 1979, Ser. No. 71,223
Int. Cl.³ F16D *35/00, 43/25*
U.S. Cl. 192—58 B **21 Claims**



1

1. A torque transmitting device adapted to transmit torque from an input comprising a first member defining an operating chamber therein, a second member disposed within said operating chamber and rotatable relative to said first member about an axis of rotation, a fluid reservoir, a fluid passageway connectable with said fluid reservoir and said operating chamber, pivotable valve means for controlling the fluid flow through said fluid passageway to effect selective communication between said fluid reservoir and said operating chamber, fluid means disposed in said reservoir and selectively displaceable into said operating chamber through said fluid passageway whereby fluid is positioned in said operating chamber to transmit energy through said fluid from one of said members to the other, a thermostatic ring having one end connected to said first member and responsive to the ambient temperature of the torque transmitting device and having its opposite end connected to said valve means for controlling the position of said valve means and the volume of said fluid means in said operating chamber in response to the ambient temperature of the torque transmitting device, said ring being radially spaced apart from said axis of rotation and being disposed substantially coaxial to said axis of rotation, said opposite end of said ring being connected to said valve member to pivot said valve member about a pivot point which is radially spaced apart from said axis of rotation to control the fluid flow through said fluid passageway, and fastener means for connecting one of said first and second members to the input to effect relative rotation of said first and second members, said fastening means being disposed substantially coaxial to said axis of rotation.

4,282,962

PIVOTAL MOUNTING ASSEMBLY

Richard C. St. John, North Canton, Ohio, assignor to Aspro, Inc., Canton, Ohio

Filed Nov. 2, 1978, Ser. No. 957,141
Int. Cl.³ F16D *43/18*
U.S. Cl. 192—105 CD **9 Claims**

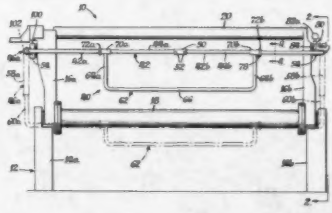
1. In a centrifugal clutch construction of the type having a driven clutch member, drive shaft means, hub means mounted on the drive shaft means for rotation with said shaft means, clutch shoe means pivotally mounted on the hub means for outward movement under the influence of centrifugal force toward and against the drive clutch member for coupling engagement therewith, and pivot means pivotally mounting the clutch shoe means on the hub means, wherein the improvement includes: said pivot means being a generally cylindrical-shaped projection mounted on the hub means and extending in an axial direction along said hub means; a longitudinally extending groove formed in the cylindrical-shaped projection; and a strip of plastic material mounted in said groove having a low-friction, shock-absorbing arcuate pivotal bearing surface for the clutch shoe means, said plastic strip being complementary to the pivot projection groove and having a radius of curvature substantially equal to the radius of curvature of the cylindrical-shaped projection with said arcuate bearing surface lying in the imaginary circumference defined by said projection.

4,282,963

BARRIER GUARD

Frederick G. Kafura, and Thomas M. Medland, both of Appleton, Wis., assignors to Hammermill Paper Company, Erie, Pa.

Filed May 3, 1979, Ser. No. 35,785
Int. Cl.³ F16P *3/08*
U.S. Cl. 192—133 **8 Claims**



1. A barrier guard for use with apparatus which includes frame means rotatably supporting a pair of elongated rolls so that said rolls establish a nip therebetween accessible to an operator, said barrier guard comprising a first generally U-shaped guard bar having parallel substantially coplanar arm portions interconnected by an elongated reach, said arm por-

tions being axially adjustable in length and adapted for pivotal connection to said frame means so that said elongated reach is substantially parallel to said rolls and is spaced therefrom, and a second generally U-shaped guard bar having parallel arm portions interconnected by an elongated reach, said arm portions of said second guard bar being pivotally mounted on said elongated reach of said first guard bar so that said elongated reach of said second guard bar is spaced from said reach of said first guard bar, and means operatively associated with said first and second guard bars for limiting the extent of relative pivotal movement of said second guard bar relative to said first guard bar.

4,282,964

ARTICLE TRANSFER DEVICE

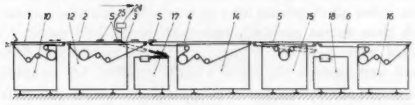
Wilhelm Hogenkamp, Hanover, and Gert Wostbrock, Garbsen, both of Fed. Rep. of Germany, assignors to Otto Hansel GmbH, Fed. Rep. of Germany

Filed Jul. 17, 1979, Ser. No. 58,196

Claims priority, application Fed. Rep. of Germany, Jul. 17, 1978, 2831323

Int. Cl.[3] **B65G** *47/26, 47/64*

U.S. Cl. 198—358 **5 Claims**



1. A device for transferring articles arriving in transverse rows on a circulating endless delivery belt, to at least two processing sites, wherein a delivery belt is followed by a continuous conveyor belt at the same plane and operating in the same direction as the delivery belt, the delivery belt has at its end a downwardly pivotable beak, by way of which arriving articles can be brought to a removal belt positioned at a lower level than the delivery belt and feelers are provided which control the pivoting of the beak as a function of the articles arriving on the delivery belt, characterized in that a transfer belt is adapted for pivotal movement at one end thereof and about an axis in the plane of said removal belt, said transfer belt further adapted for up and down pivotable movement so as to lie either in the plane of said removal belt or the plane of the beak of said delivery belt upon said beak being in its lowest downwardly pivoted position to thereby transfer articles in transverse rows from said delivery belt to said transfer belt.

4,282,965

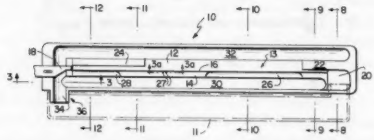
FEEDING AND ORIENTING DEVICE

Erwin F. Bates, Binghamton, and Michael D. Snyder, Chenango Bridge, both of N.Y., assignors to Universal Instruments Corporation, Binghamton, N.Y.

Filed Nov. 16, 1979, Ser. No. 95,514

Int. Cl.[3] **B65G** *47/24*

U.S. Cl. 198—380 **9 Claims**



1. Apparatus for feeding, and orienting parts having a body and spaced terminals projecting in a predetermined fixed relationship from said body, said apparatus comprising:

a laterally sloping shelf having a guide means along the length of said shelf adapted to prevent lateral sliding of said parts down said shelf and to orient said parts by sliding engagement of at least one of said terminals with said guide means as said parts are fed along said guide means;

fluid ejection means adjacent to said guide means for positive fluid engagement with at least one of said terminals to eject improperly oriented parts as they are fed along said guide means.

8. A method for orienting parts having a body and terminals projecting in a predetermined, fixed relationship from said body comprising the steps of:

feeding said parts along a guide means for guiding said parts with a greater number of terminals on one side of said guide means and at least one of a lesser number of terminals on the other side of said guide means;

providing fluid ejection means along the path of travel of said parts along said guide means for directing fluid against at least one terminal of said parts to eject a misoriented part from said guide means.

4,282,966

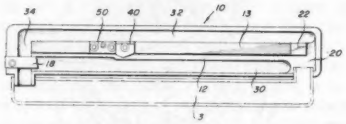
FEEDING AND ORIENTING DEVICE

Erwin F. Bates, Binghamton, and Michael D. Snyder, Chenango Bridge, both of N.Y., assignors to Universal Instruments Corporation, Binghamton, N.Y.

Filed Jan. 7, 1980, Ser. No. 109,873

Int. Cl.[3] **B65G** *47/24*

U.S. Cl. 198—382 **7 Claims**



1. An apparatus having a guide means and adapted for feeding and orienting parts, each of said parts having a body which may be described in orientation relative to a line of travel along said guide means by a major reference axis and a minor reference axis perpendicular to and intersecting said major reference axis, such that said body is properly oriented when conditions are met that said major reference axis is tangent to a point of said line of travel and said minor reference axis is in a required angular orientation about said line of travel at said point and said body is misoriented when said conditions are not met, comprising:

a first ejection means adjacent to said guide means for ejecting parts that are misoriented in one way, with said major reference axis yawed relative to said line of travel, by causing transverse displacement of said parts relative to said guide means, whereby said parts misoriented in one way are caused to become unbalanced and to fall from said guide means;

a second ejection means adjacent to said guide means, for ejecting parts that are otherwise misoriented, with said major reference axis pitched or said minor reference axis rolled out of said required orientation relative to said line of travel, said second ejection means located to emit fluid onto said otherwise misoriented parts to blow them from said guide means and not to blow properly oriented parts from said guide means.

4,282,967

GRAIN ELEVATOR CONTROLS

Harry O. Boling, Garland, and Larry R. Brzycki, Lewisville, both of Tex., assignors to Maxi-Tronic, Inc., Dallas, Tex.

Filed Jan. 17, 1980, Ser. No. 113,138

Int. Cl.[3] **B65G** *43/04*

U.S. Cl. 198—571 **10 Claims**

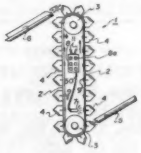
6. In combination with grain elevator equipment of the type including a plurality of spaced buckets for conveying granular

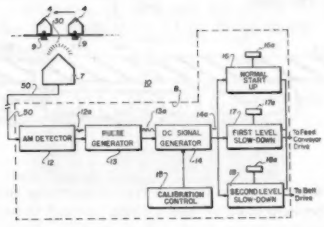
material between feed and dispensing stations, first motive means for continuously transporting said buckets between said stations, second motive means for supplying said granular material to said buckets at said feed station, said buckets having a metallic material associated therewith,

a motion detector apparatus for sensing and responding to the rate of transport of said buckets, said motion detector apparatus comprising:

(a) metal detector means for generating first signals respectively responsive to the passage of each bucket in proximity to said metal detector means;

(b) control means electronically coupled to said metal detector means responsive to said first signals for generating a DC voltage proportional to the rate of transport of said buckets past said metal detector means;





(c) automatic calibration means coupled to said control means for assuring that the DC voltage is of an identical predetermined magnitude for respectively different desired operating rates of said bucket transport; and

(d) trigger means coupled to said control means for generating respective trigger signals for controlling said second motive means whenever the said DC voltage is less than said predetermined magnitude by a first deficient amount and for controlling said first motive means whenever the said DC voltage is less than said predetermined magnitude by a second deficient amount greater than said first deficient amount.

4,282,968

SCRAPER-CHAIN CONVEYOR CHANNEL SECTION

Helmüt Temme, Waltrop, Fed. Rep. of Germany, assignor to Gewerkschaft Eisenhütte Westfalia, Lünen, Fed. Rep. of Germany

Filed Aug. 13, 1979, Ser. No. 66,275

Claims priority, application Fed. Rep. of Germany, Aug. 18, 1978, 2836132

Int. Cl.³ B65G *19/28*

U.S. Cl. 198—735 **18 Claims**

1. A scraper-chain conveyor comprising:

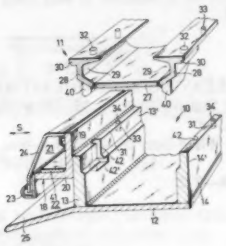
(a) a plurality of channel sections joined together end-to-end,

(b) each channel section comprises a lower, trough-shaped part and an upper, trough-shaped part detachably connected to the lower part,

(c) the lower part including a pair of side walls connected together and a plough guide section,

(d) connectors associated with the side walls of the lower parts articulatedly join each pair of adjacent channel sections,

(e) each connector is housed in correspondingly shaped pockets formed in the adjacent portions of the respective side walls of the respective lower parts,



(f) each upper part including two bars running respectively along the under side of its side walls and overlying the pockets to hold the connectors in position housed in the pockets.

4,282,969

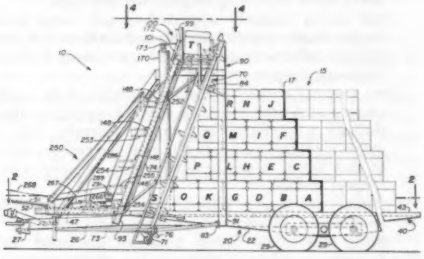
MATERIAL MOVING APPARATUS FOR A BALE WAGON

Randall E. Zipser, Clovis, Calif., assignor to Sperry Corporation, New Holland, Pa.

Filed Aug. 8, 1979, Ser. No. 64,969

Int. Cl.³ B60P *1/00*

U.S. Cl. 198—747 **9 Claims**



1. Apparatus for moving material from a first location on a support surface to a second location thereon comprising:

an elongate rack affixed to said support surface and extending substantially from a first position to a second position thereon, said rack being reciprocable along a line between said first and second positions and having a plurality of catch means thereon generally equally spaced along the length thereof;

means affixed to said rack for reciprocating same;

a ratchet mechanism including a main body portion with first and second opposing ends slidably engaged with said rack, a first ratchet plate pivotally mounted on said first end of said main body portion for movement between an operative position wherein it may serially engage said catch means on said rack and an inoperative position remote therefrom, a second ratchet plate pivotally mounted on said second end of said main body portion for movement between an operative position wherein it may serially engage said catch means on said rack and an inoperative position remote therefrom, an over-center device having means thereon to selectively simultaneously pivot said first and second ratchet plates between said operative and inoperative positions so that only one is in said operative position at a time;

means on said main body portion to engage material; and

means mounted on said support surface to engage said over-centered device to actuate same to reverse the positions of

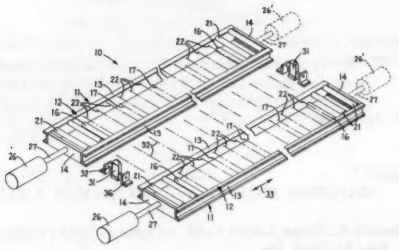
said first and second ratchet plates whereby said main body portion will be moved along the length of said rack until actuation of said over-center device, upon which the direction of movement of said main body portion is reversed.

4,282,970

OSCILLATING-ACCUMULATING CONVEYOR

William L. Smock, 5831 S. Meridian St., Indianapolis, Ind. 46217

Filed Dec. 26, 1979, Ser. No. 107,128
Int. Cl.³ B65G *25/04*
U.S. Cl. 198—772 **2 Claims**



1. An oscillating-accumulating conveyor, comprising:

horizontally elongated frame means defining a substantially horizontally extending longitudinal direction;

wheel means rotatably supported on said frame means at longitudinally spaced intervals and disposed for supporting and rolling engagement with a stationary horizontally extending support surface;

drive means for causing said frame means to be cyclically reciprocated back and forth in said longitudinal direction through a predetermined stroke, whereby said frame means is rollingly supported during said reciprocation due to said wheel means being rollingly engaged with said support surface;

a plurality of conveyor rolls mounted on said frame means at longitudinal intervals therealong, said conveyor rolls being individually freely rotatably supported on said frame means for individual rotation about horizontal axes which extend substantially perpendicular to said longitudinal direction, said conveyor rollers at their uppermost peripheral surface defining a substantially horizontal conveying plane which extends longitudinally of the conveyor, whereby a load to be conveyed can be supported on said conveyor rolls and moved longitudinally along said plane;

one-way holding means extending in said longitudinal direction for permitting said load to be forwardly moved along said conveyor during the forward stroke of said drive means while preventing rearward movement of said load during the rearward stroke of said drive means, whereby said conveyor rolls rollingly engage and support said load as the frame means and the conveyor rolls mounted thereon are retracted rearwardly relative to the load by said drive means, whereby the cyclic reciprocation of said frame means by said drive means causes the load to be intermittently advanced in a steplike manner along the length of the conveyor; and

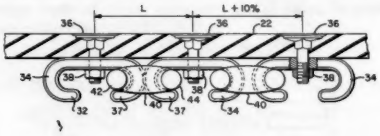
said one-way holding means including a plurality of individual one-way holding devices disposed at spaced intervals along a row which extends parallel to said longitudinal direction, each said holding device including a movable holding member swingably movably supported on a mounting structure which is fixedly secured relative to said support surface, said holding member being normally maintained in a first position wherein a part thereof projects upwardly for physical engagement with an end surface of the load for positively preventing the load from moving in said rearward direction, said holding member being movable by said load into a retracted position wherein the holding member is disposed in its entirety below the load in response to engagement of said holding member by said load during its forward movement so as to permit unrestricted free forward movement of the load during advancing of the conveyor, said holding member being provided with a roughened nose at the upper end thereof which is disposed for engagement with a bottom lower surface on the load when the holding member is positioned thereunder and is held thereby in said retracted position, whereby the roughened nose engages a bottom surface of the load to prevent rearward movement thereof.

4,282,971

CONVEYOR BELT CHAIN AND METHOD FOR ITS USE

Harry R. Becker, Utica, Pa., assignor to Joy Manufacturing Company, Pittsburgh, Pa.

Filed Oct. 5, 1979, Ser. No. 82,370
Int. Cl.³ B65G *15/28*
U.S. Cl. 198—846 **3 Claims**



1. In a conveyor belt of the type comprising an elongated web of resilient material and a chain adapted to be driven by engagement with teeth of a dual sprocket drive extending along the longitudinal length of said web and having selected links secured to said web intermediate its edges; the improvement in said chain comprising a strand of alternate links one of which is a C-shaped link secured to said belt and the other of which is a connecting link which permits the C-shaped links on either side to approach each other or to separate until they engage the connecting link to transmit pull thereto, the C-shaped links being connected to the belt while out of pulling engagement with forward and aft connecting links whereby, when tension is applied to the chain, the C-shaped links will pull apart to stretch said belt along its longitudinal axis and,

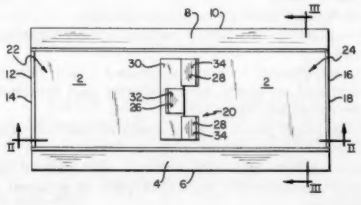
said connecting links each comprise spaced crossbar portions interconnected by spacers to provide a central opening through which hooked portions of the C-shaped links extend, and slots at the edges of said connecting link which receive the teeth of a dual-sprocket drive.

4,282,972

PAN FOR ANGIOGRAPHIC CATHETERS

Robert D. Chiulli, 71 Cherry St., Somerville, Mass. 02144

Filed Feb. 15, 1980, Ser. No. 121,694
Int. Cl.³ B65D *85/04, 1/36, 3/28, 5/48*
U.S. Cl. 206—303 **10 Claims**



1. A pan for angiographic catheters and catheter guide

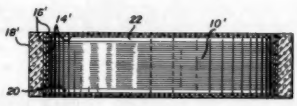
wires, the pan comprising a rectangular planar bottom portion, a first pair of walls comprising a first wall upstanding from a first end of said bottom portion and a second wall upstanding from a parallel second end of said bottom portion, a second pair of walls comprising a third wall upstanding from a third end of said bottom portion and a fourth wall upstanding from a parallel fourth end of said bottom portion, said first pair of walls being inclined from said bottom portion inwardly toward each other, said walls and said bottom portion forming a basin adapted to retain a liquid, and divider means upstanding from said bottom portion and extending generally normal to said first pair of walls, said divider means dividing said basin into a plurality of compartments, said divider means having a first barrier portion extending toward a first of said compartments and a second barrier portion extending toward a second of said compartments.

4,282,973

PACKAGE FOR FLEXIBLE MAGNETIC MEDIA AND METHOD THEREFOR

Constance J. Binkowski, Sunnyvale, Calif., assignor to Verbatim Corporation, Sunnyvale, Calif.

Filed Oct. 15, 1979, Ser. No. 84,778
Int. Cl.³ B65D *85/57, 85/62, 71/08, 81/04*
U.S. Cl. 206—444 **19 Claims**



1. An improved package adapted for a plurality of thin flexible materials of substantially identical geometry, the package comprising:

a first and a second substantially rigid plate of length and width dimensions substantially identical to that of a plurality of thin flexible materials to be packaged; and

a heat shrinkable material having a hole therein to provide an air escape path suitably heat sealed and heat contracted so as to snugly contain said thin flexible materials therewithin with said thin flexible materials being aligned uniformly on top of one another in a stack with said first substantially rigid plate aligned on top of said stack and with said second substantially rigid plate aligned on the bottom of said stack so that the total thickness of said stack is less than the longest dimension of said thin flexible materials.

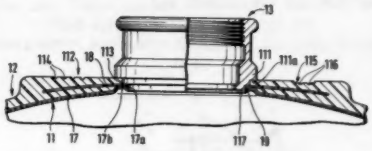
4,282,974

PLASTIC-ENCLOSED METAL BARREL

Siegfried Quandel, Neunkirchen, Fed. Rep. of Germany, assignor to Schäfer Werke GmbH, Neunkirchen, Fed. Rep. of Germany

Filed Aug. 16, 1979, Ser. No. 66,973
Claims priority, application Fed. Rep. of Germany, Aug. 22, 1979, 7824992[U]; Dec. 2, 1979, 7835772[U]
Int. Cl.³ B65D *21/02, 1/46;* **B32B** *1/02;* **G09F** *3/00*
U.S. Cl. 206—509 **11 Claims**

1. In a barrel including an inner shell of sheet metal arced in the area of the barrel bottoms and on which is provided a bung socket, and further including a coat of plastic, said bung socket being surrounded by a reinforcing sheet metal plate enveloped by said plastic coat, the improvement comprising wherein said reinforcing sheet metal plate encircles said bung socket and includes at least a portion thereof which is spaced from said barrel bottom, wherein said plastic coat is received in the spacing between said portion of said reinforcing sheet metal plate and said barrel bottom and encases said reinforcing sheet metal plate therein, wherein said plastic coat at the end which encases said reinforcing plate therein forms a substantially planar surface which encircles said bung socket and defines an inscription field, and wherein said inscription field consists at least partially of indentations in said plastic coat.

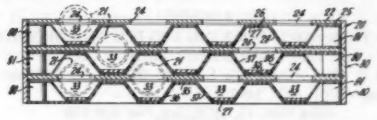


4,282,975

JEWELRY DISPLAY TRAY

Joseph Ovadia, 343 Sackett St., Brooklyn, N.Y. 11231

Filed Jan. 22, 1980, Ser. No. 114,182
Int. Cl.³ B65D *1/34, 6/04*
U.S. Cl. 206—566 **15 Claims**



1. A jewelry display tray comprising an upper member, a plurality of recesses formed in said upper member extending in a downward direction when a major plane of said tray is oriented in a substantially horizontal direction, said recesses being arranged in offsetting rows, a lower member having a plurality of recesses extending in an upward direction when the major plane of said tray is in a horizontal position, said upwardly extending recesses arranged in offsetting rows, said upper and lower members being complimentarily fit together with said downwardly extending recesses of said upper member fitting in spaces located between said upwardly extending recesses of said lower member, said upwardly extending recesses of said lower member fitting in spaces located between said downwardly extending recesses of said upper member, whereby said upper and lower members form an interlocking structure, and means having access openings overlying said upper member so that the items of jewelry passing through said openings will be accommodated in said downwardly extending recesses of said upper member, whereby upwardly extending recesses of a first tray aligned with downwardly extending recesses of a second tray form compartments for accommodating items of jewelry when said first and second trays are positioned one on top of the other.

4,282,976

DISPLAY HOLDER

Robert E. Fitzgerald, P.O. Box 100, Barrington, Ill. 60010

Filed Dec. 13, 1979, Ser. No. 103,335
Int. Cl.³ A47F *5/02*
U.S. Cl. 211—59.1 **8 Claims**

1. A display holder for pre-packaged goods comprising

(a) a substantially rectangularly-shaped base providing a flat platform,

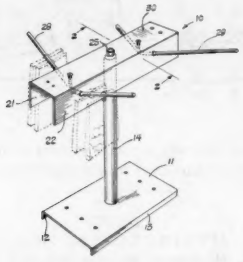
(b) a standard extending vertically from said platform of said base,

(c) a top member rotatably mounted on the free end of said standard,

(d) means for rotatably mounting said top member on said standard,

(e) elongated hanger means projected through said top member so as to extend to either side thereof,

(f) means provided by said top member for carrying said hanger means whereby said hanger means project laterally from said top member, and



(g) means adjustably connecting said hanger means to said top member whereby their length of projection from said top member may be varied.

4,282,977

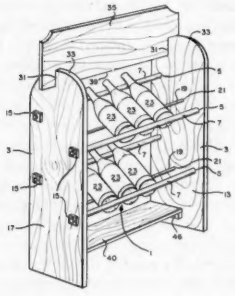
END THREADED LOCKING DEVICE AND METHOD FOR USING SAME

Eugene L. Di Lorenzo, c/o Louis A. Tirelli, 52 S. Main St., Spring Valley, N.Y. 10977

Filed Nov. 15, 1978, Ser. No. 960,824

Int. Cl.³ A47F *7/28*

U.S. Cl. 211—74 **1 Claim**



1. A joining device for quickly and easily connecting together standards which comprises:

a. a pair of standards having corresponding preformed apertures and cavities therein;

b. at least two dowels each spaced apart, one being lower than the other and having a reduced section adjacent shoulders at both ends, said reduced sections being threaded in opposite directions;

c. at least one pair of keepers provided for each of the at least two dowels for being threaded onto each end of the at least two dowels; and

d. at least one rib spaced apart from and below said at least two dowels;

whereby the first one of the pair of standards is selected and one end of each of the at least two dowels is inserted through succeeding ones of the corresponding preformed apertures provided therein and one of each of said at least one pair of keepers is started to be screwed onto each end of the at least two dowels which has been inserted through the corresponding preformed apertures in said selected one of the pair of standards, then, the second one of the pair of standards is moved toward the free and opposite ends of the at least two dowels said free and opposite ends of the at least two dowels being inserted through said preformed apertures therein, while said ribs are each positioned in respective ones of said preformed cavities, and the remaining one of each of said at least one pair of keepers is started to be screwed onto the corresponding free ends of the at least two dowels, and succeeding ones of the at least two dowels are each rotated until said shoulders butt tightly against said first one and second one of the pair of standards, forming a free standing fixture for supporting one or more articles with said at least two dowels and at least one rib.

4,282,978

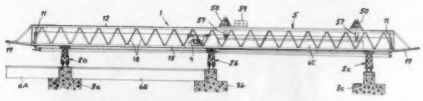
BRIDGE CRANE FOR THE EMPLACEMENT OF ELONGATE PREFABRICATED MEMBERS OF STRUCTURES SPANNING A MULTIPLICITY OF SPACED-APART SUPPORTS

Antonio Zambon, Via Gorizia, Tradate (Varese), Italy

Filed Jan. 28, 1980, Ser. No. 115,710

Int. Cl.³ B66C *17/06*

U.S. Cl. 212—205 **9 Claims**



1. A bridge crane for emplacing elongate prefabricated members of a structure spanning a series of spaced-apart transversely extending piers, comprising:

at least three roller mountings respectively disposed on as many of said piers;

an elongate framework with two rigidly interconnected spaced-apart trusses having upper and lower stringers separated by a longitudinal space, said lower stringers being slidably supported on said roller mountings;

hoist means displaceably mounted on said upper stringers for elevating a prefabricated member into the space between said trusses and transporting said member longitudinally of said framework; and

drive means for longitudinally displacing said framework relatively to said roller mountings, said drive means including a motor-driven capstan on said framework, cable means wound around said capstan, and a set of deflecting rollers on said framework, said cable means passing around said deflecting roller and being anchored to one of said roller mountings.

4,282,979

FORCE ABSORBING ARRANGEMENT

Josef Friedrichs, Krefeld-Verberg, Fed. Rep. of Germany, assignor to Ringfeder G.m.b.H., Krefeld, Fed. Rep. of Germany

Filed Jun. 1, 1979, Ser. No. 44,549

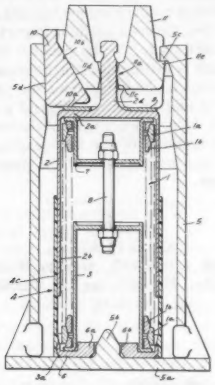
Claims priority, application Fed. Rep. of Germany, May 4, 1979, 2918092

Int. Cl.³ F16F *1/06*; B61G *11/06, 11/14*

U.S. Cl. 213—29 **23 Claims**

1. An arrangement for resilient absorption of forces, particularly for an intermediate buffer coupling of rail vehicles, comprising an elongated housing having two spaced ends, a base plate and an axis, one of said ends being closed, whereas the other of said ends is open and has an opening; a friction element located in the region of said open end of the housing; a resilient element cooperating in series with said friction element and formed as a friction spring having two spaced ends and including a plurality of inner conical rings and a plurality of outer conical rings cooperating with one another with interposition of a lubricant; outer and inner cup-shaped casing members

located in said housing and closably accommodating said friction spring, said outer cup-shaped member outwardly surrounding said outer conical rings of said friction spring and having a bottom located in the region of one end of the latter so as to form a support for said one end of said friction spring, said inner cup-shaped member being located inwardly of said inner rings of said friction spring and having a radially outwardly extending flange in the region of the other end of the latter so as to form a support for said other end of said friction



spring, said flange of said inner cup-shaped member abutting against said base plate of said housing; and a sealing element which is fitted on said outer cup-shaped member and held on said inner cup-shaped member so that said cup-shaped members can move relative to one another in direction of elongation of said housing, but at the same time are sealed by said sealing element, said sealing element having a radially inwardly extending collar which is interposed between said flange of said inner cup-shaped member and said base plate of said housing so as to clamp said sealing element.

4,282,980

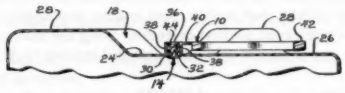
PLASTIC HANGER FOR CONTAINERS

David A. Winchell, Twin Lakes, Wis., assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Continuation of Ser. No. 25,261, Mar. 29, 1979, abandoned. This application Jun. 9, 1980, Ser. No. 157,778

Int. Cl.³ B65D *23/00*

U.S. Cl. 215—100 A **13 Claims**



8. A plastic container comprising a bottom wall adapted to rest on a flat surface, a rib integral with said bottom wall and a separate hanger for hanging said container in an inverted position, said hanger comprising a bar secured to said rib, a loop for hanging the container and a relatively thin hinge extending between and integrally joining said bar and said loop, said bar comprising an inverted channel including a top wall and a pair of sidewalls for fitting over said rib, said hinge extending normally from the side of said channel and being disposed in the unstressed state to support said loop adjacent the bottom of said container to reduce interference when the container is set on a flat surface.

4,282,981

BRIGHT WELDED SEAM CAN OF TINPLATE

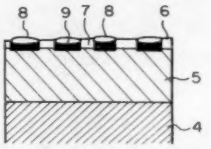
Yoichi Kitamura; Hisashi Hotta, both of Yokohama, and Makoto Ito, Kawasaki, all of Japan, assignors to Toyo Seikan Kaisha, Ltd., Tokyo, Japan

Filed Apr. 11, 1980, Ser. No. 139,632

Claims priority, application Japan, Apr. 12, 1979, 54-43605

Int. Cl.³ B65D *7/38*

U.S. Cl. 220—75 **4 Claims**



1. A bright welded seam can of tinplate having a side seam formed by welding a tin plate blank, wherein each of the inner and outer surfaces of said side seam has an outermost surface layer having a thickness of 50 to 400 A and being composed of oxides and a subsequent intermediate layer composed of an iron-tin alloy, which has a thickness corresponding to 5 to 100% of the thickness of the whole tin layer in the tinplate blank, and wherein said inner and outer surfaces of the side seam have a reflectance corresponding to at least 60% of the reflectance of the tinplate blank.

4,282,982

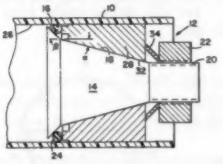
TUBE CLOSURE DEVICE

Alfred Nuesslein, Kruppstrasse 31, 447 Meppen, Fed. Rep. of Germany

Filed Mar. 11, 1980, Ser. No. 129,451

Int. Cl.³ B65D *53/00*

U.S. Cl. 220—237 **5 Claims**



1. A tube closure device comprising a closure assembly including a central member with an outer frusta-conical means, a plurality of arcuate segments positioned around a portion of said frusta-conical means, an O-ring seal in contact with a portion of said frusta-conical means and an end of each of said arcuate segments being in contact with said O-ring seal, adjustable means on said central member for applying force to said arcuate segments to cause said segments to be moved axially and radially on said frusta-conical means and cause said O-ring to move axially and radially and a belleville spring mounted on said central member between said adjustable means and said arcuate segments, and said adjustable means including a threaded portion on said central member and a nut threaded on said threaded portion.

4,282,983

CONTAINER WITH IMPROVED SPRING-LIKE HINGE

Peter T. Swartzbaugh, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Jul. 14, 1980, Ser. No. 167,991

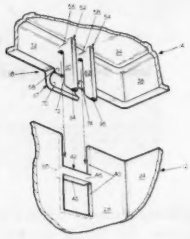
Int. Cl.³ B65D *43/24*

U.S. Cl. 220—335 **10 Claims**

10. A hinge assembly for a two-part container having a body and a lid comprising:

a first hinge element including an elongate, rigid shaft having a first and second end, having a flat front surface, a flat top surface, a flat bottom surface and a C-shaped rear surface spaced apart from said front surface by a distance D_1 and having a radius of curvature R_1;

means on each said first and second end of said rigid shaft to secure said shaft to and space said shaft apart from said container body;



a second hinge element including a rigid, elongate first member depending downwardly from said lid and having a generally rectangular, cross-sectional area in registry with said first hinge element; and

a second member depending downwardly from said lid and having a flexible first portion and terminating in a generally C-shaped jaw portion corresponding with said C-shaped rear surface having a radius of curvature R_1, said jaw portion spaced apart from said first member a distance D_1.

4,282,984

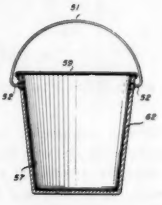
COMPOSITE CONTAINER STRUCTURE

Byron V. Curry, Jr., Box 5040, Montecito, Calif. 93108

Division of Ser. No. 3,903, Jan. 16, 1979, which is a continuation-in-part of Ser. No. 928,283, Jul. 26, 1978, abandoned. This application Aug. 13, 1980, Ser. No. 177,734

Int. Cl.[3] **B65D** *90/04, 5/56, 3/26*

U.S. Cl. 220—404 **12 Claims**



1. A composite container having an outer support and an inner liner surrounding the space within the container and top and bottom rigid gas impervious cover means adapted to be seamed onto the container for cooperating with said liner to seal the contents placed in the storage space within the structure, comprising a fibrous tubular member having a generally circular crossection defined by exterior and interior walls and forming an open ended outer support member, said tubular member having an aperture therein to form a window, a tubular shrinkable plastic barrier film inner liner fitted within the support member for covering said window, said liner having a portion thereof extending beyond at least one of the ends of said tubular member, said liner being flexible and impervious to gas flow, said liner being sealed at one end and having said other open end extending from within the support member and beyond an open end of the support member to define the mouth of the tubular liner, a portion of the mouth of said liner that extends beyond the support member being folded over and around to overlap the exterior wall of the support member at said one end of said at least one of the ends of said support, the overlapped portion of the liner being heat shrunk to be wrinkle-free and tightly conforming to the exterior surface of the support member at said one end thereof, said heat shrunk overlapped portion of the mouth of the liner forming a plastic ring integral with that open end of the support member, said ring forming a smooth seat for cooperating with the top cover means seamed to the support member over said ring to seal the mouth of the liner, the bottom cover means being crimped to the other end of the support member, said plastic liner being supported within the fibrous member having a product stored within the liner which together with the cover means seamed to the support member over the ring forms a gastight impervious container enclosing the storage space for the product to protect such product when there is a difference in pressure between the storage space within the container and the pressure on the outside thereof, and said liner covering said window serving as a means through which the contents of the container can be visible while the condition of the liner exposed across said window indicates the maintenance of the pressure condition within the container.

4,282,985

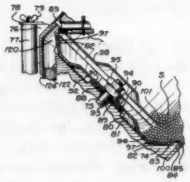
SEED PLATE

Ray Yamamoto, Rte. 1, Box 1376, Wapato, Wash. 98951

Filed Jan. 21, 1980, Ser. No. 113,827

Int. Cl.[3] **A01C** *7/04*

U.S. Cl. 221—254 **11 Claims**



1. In a hopper having an inclined base portion, upstanding side walls extending upwardly from the base portion and an outlet opening in the base portion at the top of the incline, the improvement comprising a circular seed plate removably disposed within the hopper to overlie the base portion, said plate powered to rotate about its central axis and having a lower face adjacent the hopper base portion, an upper face opposite the hopper base portion and a plurality of cells spaced about the circumference of said plate, each of said cells including:

an end surface extending generally radially inwardly from the outer diameter of said plate;

a trailing shelf surface extending from the radially inner end of said end surface forwardly in the direction of rotation of said plate towards the circumference of said plate; and

a leading shelf surface extending longitudinally forwardly of said trailing shelf surface, said leading shelf surface having a beveled edge portion extending along the intersection of the upper face of said plate and said leading shelf surface.

4,282,986

METHOD FOR DISCHARGE OF QUANTITIES OF FLUID OR SEMI-FLUID SUBSTANCES FROM A CONTAINER

Bo T. af Ekenstam, Mölndal, and Erik G. P. Nordqvist, Säro, both of Sweden, assignors to Landstingens Inkopscentral, Solna, Sweden

Continuation-in-part of Ser. No. 661,177, Feb. 25, 1976, Pat. No. 4,072,249. This application Dec. 19, 1977, Ser. No. 861,843

Claims priority, application Sweden, Mar. 3, 1975, 7502318

The portion of the term of this patent subsequent to Feb. 7, 1995, has been disclaimed.

Int. Cl.[3] **B67B** *7/00;* **B65D** *37/00*

U.S. Cl. 222—1 **8 Claims**

1. A method of dispensing fluid or semi-fluid liquids or

pastes in which said liquid or paste is contained in a container having a top flexible dome and a bottom dome connected at their open ends to each other and a laterally projecting gripping means at the connection of the open ends of the domes, the bottom dome having a closed spout remote from the open end thereof, said method comprising: forming an opening in said spout, affixing a hypodermic needle to said spout at said opening, pressing said top dome downwardly toward said bottom dome and forcing said top dome into said bottom dome

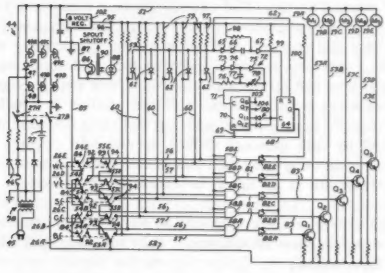
while applying counter-pressure to the gripping means, and discharging said liquid or paste from said bottom dome through the open spout and hypodermic needle under the action of the forcing of the top dome into the bottom dome and the application of the counter-pressure to the gripping means, said counter-pressure acting outside the periphery of the domes whereby to provide stability while also acting at the level of the connection of the domes whereby the fingers of the user are remote from the hypodermic needle, the gripping means also serving to limit the pressing action to the top dome.

4,282,987

BEVERAGE DISPENSING AND METERING APPARATUS

Ronald C. Thomas, and Ronald G. Thomas, both of P.O. Box 5747, Nashville, Tenn. 37208

Filed Nov. 24, 1978, Ser. No. 963,412
Int. Cl.³ B67D *5/12, 5/64*
U.S. Cl. 222—70 **9 Claims**



1. A beverage dispensing and metering apparatus comprising:

(a) a plurality of liquid pumps, each pump having an inlet and an outlet,

(b) an electric motor drivingly connected to each of said pumps,

(c) a liquid supply line in fluid communication with each of said pump inlets, each supply line being adapted to lead from a separate liquid storage container,

(d) a liquid dispensing line in fluid communication with each of said pump outlets,

(e) electrical power supply means,

(f) an individual electrical motor control circuit connected to a corresponding electric motor and to said power supply means,

(g) manually operable switch means in each of said motor control circuits,

(h) each said manually operable switch means comprising ganged first and second switches for simultaneous manual actuation between an open position for de-energizing said corresponding electric motor and a closed position for energizing said corresponding electric motor, and

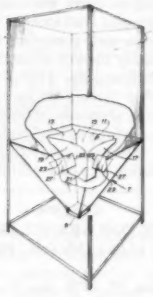
(i) first interlocking circuit means for electrically coupling all of said first switches and second interlocking circuit means for electrically coupling all of said second switches, whereby manual actuation of only one of said switch means to its closed position will energize only its corresponding electric motor and simultaneously de-energize each of said other electrical motors, and simultaneous actuation of any two or more of said switch means to their open positions will simultaneously de-energize all said electric motors regardless of the positions of said other switch means.

4,282,988

APPARATUS FOR FACILITATING FLOW OF SOLID PARTICLES BY GRAVITY THROUGH A CONTAINER HAVING AN OPENING IN THE BOTTOM THEREOF

Clarence E. Hulber, Jr., Muskogee, Okla., assignor to Burch I. Williams, Tulsa and B. J. Malouf, Muskogee, both of, Okla., part interest to each

Filed Aug. 13, 1976, Ser. No. 714,134
Int. Cl.³ B65D *88/28*
U.S. Cl. 222—184 **8 Claims**



1. An apparatus adapted to be positioned within a container for interrupting a consolidating stress field generated within the container to facilitate the flow of solid particles through the container, which apparatus comprises:

a multisurfaced body the surfaces of which contact said solid particles and are described by curves in both vertical and horizontal directions, the surfaces also converging toward the center and bottom of the container.

4,282,989

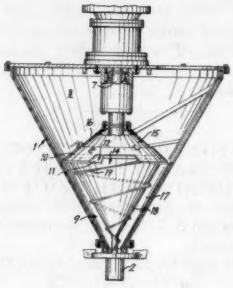
DEVICE WITH A CONICALLY SHAPED HOUSING AND FEELING FOR FEEDING PLASTICS MATERIAL TO AN EXTRUDER

Bernhard Schmitt, Lüdinghausen, Fed. Rep. of Germany, assignor to Joachim Kreyenborg & Co., Münster-Kinderhaus, Fed. Rep. of Germany

Filed Nov. 2, 1979, Ser. No. 90,646
Claims priority, application Fed. Rep. of Germany, Nov. 2, 1978, 2847494
Int. Cl.³ B65D *88/54*
U.S. Cl. 222—316 **4 Claims**

1. A device for feeding plastics material to an extruder comprising a conically shaped housing with a material outlet opening located at the apex end thereof, motor driven means rotatably mounted within said housing for feeding the material from the material outlet opening in said housing, wherein the improvement comprises that said housing has the apex end thereof directed downwardly, said feeding means comprises a conically shaped wall with the apex end thereof directed downwardly located within and spaced inwardly from the

inner surface of said housing, said wall being disposed in parallel relation with the inner surface of said housing and forming therebetween an annular material flow passageway extending downwardly to the outlet opening from said housing, a screw blade secured to and extending around said wall from the upper end to the lower end thereof and said screw blade extending downwardly from the lower end of said wall through said outlet opening, a partition wall in combination with said feeding means divides the interior of said housing into an upper



storage chamber and a lower material conveying chamber with said conically shaped wall located within said conveying chamber, said partition wall comprises a frusto-conical member having the surfaces thereof diverging in the downward direction, the circumferentially extending lower end of said frusto-conical member having at least one opening therethrough, and arcuate segments attached to and extending around the circumferentially extending lower end of said frusto-conical member, said segments being spaced apart in the circumferential direction of said frusto-conical member.

4,282,990

DISPENSER FOR GRANULAR MATERIAL

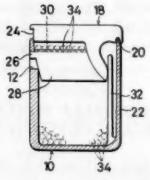
Kiyoshi Miyashita, 1328-6, Mitachi, Himeji-shi, Hyogo-ken, Japan

Filed Jul. 25, 1978, Ser. No. 927,902

Claims priority, application Japan, Aug. 6, 1977, 52-105597[U]; Aug. 6, 1977, 52-105598[U]; Apr. 28, 1978, 53-059037[U]

Int. Cl.[2] **G01F** *11/26;* **B65D** *83/04*

U.S. Cl. 222—339 **5 Claims**



1. A dispenser for dispensing granular material, said dispenser comprising:

a casing for holding granular material to be dispensed, said casing having an open top, a front wall having therein an outlet, and a rear wall;

a cap mounted in said open top of said casing;

said cap having a rear end engaging a top portion of said rear wall of said casing, such that said cap is rockable about said top portion between an upper non-dispensing position and a lower dispensing position;

said cap having a front end with a projection extending therefrom, said projecting fitting into said outlet in said front wall of said casing, and said projection limiting the extent of rocking movement of said cap toward said upper non-dispensing position thereof;

elastic means, within said casing, for urging said cap toward said upper non-dispensing position thereof;

said cap having formed therein a groove dimensioned to receive therein a predetermined amount of granular material to be dispensed when the dispenser is turned upside down, said groove being positioned to open into and communicate with said outlet when said cap is depressed, against the urging force of said elastic means, into said lower dispensing position, thereby allowing the predetermined amount of granular material in said groove to be dispensed through said outlet, and said groove being positioned to be blocked from communication with said outlet when said cap is in said upper non-dispensing position thereof.

4,282,991

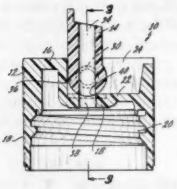
DISPENSING CLOSURE SEALS

Robert E. Hazard, Kingstown, R.I., assignor to Polytop Corporation, Slatersville, R.I.

Continuation-in-part of Ser. No. 81,213, Oct. 2, 1979. This application Sep. 8, 1980, Ser. No. 185,257

Int. Cl.[3] **B67D** *3/00, 5/32*

U.S. Cl. 222—531 **4 Claims**



1. A dispensing closure having a cap and a spout, said spout having a base shaped as a surface of revolution extending around an axis and a passage leading therethrough from said base, said cap having an external surface adjacent to said end of said base and an opening leading therethrough intercepting said external surface, said external surface being convex and having a uniform cross-sectional configuration adjacent to said opening, said cap and said spout having cooperating means holding said cap and said spout so that said spout may be rotated between an open position in which said passage and said opening are aligned and a closed position in which said end overlies said opening, said cap including a sealing means formed by said external surface around said opening, said sealing means engaging said end of said spout so as to form a seal therewith at all times, in which the improvement comprises:

said sealing means comprising an edge on said external surface, the base of said spout only touching said edge to form a seal,

said external surface adjacent to said edge having a cross-sectional configuration such that in all positions of said end said edge engages said end in the same manner so as to form a seal with respect to said end.

4,282,992

CLOSURE DEVICE FOR A DISPENSING CONTAINER

Bernard Chessler, 244 W. 74 St., New York, N.Y. 10023

Filed Nov. 30, 1979, Ser. No. 99,039

Int. Cl.[3] **B67D** *3/00*

U.S. Cl. 222—538 **5 Claims**

1. A dispensing apparatus comprising:

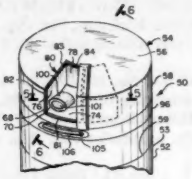
a container including a neck portion enclosing an outflow passage;

a closure for said outflow passage, said closure having a top portion and a skirt extending downwardly from the periphery of said top portion, said closure having a first cutout section in said top portion and a second cutout

section in said skirt, said first cutout section and said second cutout section defining a chamber in said closure;

a spout extending outwardly from said chamber to form an opening through which material within said container can be dispensed;

a cover for said spout, said cover being rotatably mounted on said skirt of said closure and comprising a cap member



rotatably positionable in alignment with said spout, said cover being in a closed position when said cap member is in alignment with said spout and being in an open position when said cap member is out of alignment with said spout, said cap member defining with said cavity an enclosed space surrounding said spout when said cap member is in alignment with said spout.

4,282,993

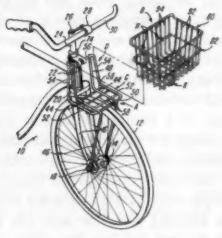
QUICK RELEASE BICYCLE BASKET AND CARRIER RACK THEREFOR

Robert F. Humlong, Maysville, Ky., assignor to Wald Manufacturing Co., Inc., Maysville, Ky.

Filed Dec. 13, 1978, Ser. No. 968,750

Int. Cl.³ B62J *7/02*

U.S. Cl. 224—31 **6 Claims**



1. A basket assembly for a bicycle or the like, said assembly comprising:

an L-shaped carrier rack having a substantially horizontal bottom portion and an upstanding rear portion, said rear portion including a pair of upwardly convergent, laterally spaced, frame members;

a basket having front, rear, side and bottom walls defined by a circumferential top frame, a circumferential center frame, and two sets of U-shaped webs the upstanding legs of which are fixedly secured to said top and center frames for defining the upstanding front, rear, and side walls of the basket and wherein the bottom of said U-shaped webs define the bottom wall of the basket,

hook-defining means projecting from the rear wall of the basket,

said hook defining means including terminal portions spaced laterally and disposed in spaced relationship with respect to said center frame of said basket, each said terminal portion of said hook defining means opening toward the other spaced terminal portion and being slideably engageable with the upwardly convergent frame members of the rack as the basket is lowered onto the rack whereby the downward movement of the basket relative to the rack is limited by a wedging action between the hook defining members and the upwardly convergent frame members so as to dispose the bottom wall of the basket in overlying relationship with the horizontal bottom portion of the rack; and

latch means depending from the bottom wall of the basket for pivotal movement between latched and unlatched positions relative to the bottom portion of the rack, said pivoted latch being required to overcome the resiliency of one of the latch elements in order to move from latched to unlatched position or from unlatched to latched position, said latch means when in latched position engaging the horizontal bottom portion of the rack for anchoring the basket to the rack and insuring against displacement therefrom.

4,282,994

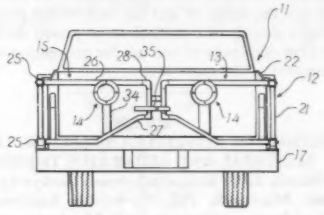
WHEEL CARRIER ASSEMBLY

Raymond C. Hilliard, 2126 8th Ave. North, Great Falls, Mont. 59401

Filed Jun. 14, 1979, Ser. No. 48,458

Int. Cl.³ B62D *43/02*

U.S. Cl. 224—42.06 **9 Claims**



1. A spare wheel apparatus including two symmetrical wheel carrier assemblies, each assembly including a vehicle mounting portion, a supporting portion and a wheel holding portion, said vehicle mounting portion including a socket member engageable with a vehicle bumper, a post section extending upwardly from said socket member, a bracket section affixed adjacent the upper portion of said post section, said bracket section including means for attaching same to a vehicle body, said supporting portion including a plurality of hinge members and being joined by a connecting section adjacent the ends thereof remote from said hinge members, said wheel holding portion including a hub member, means for securing a wheel to said wheel holding portion, said wheel holding portion being affixed to said supporting portion intermediate said hinge members and said connecting section; said apparatus including latch means selectively connecting said two wheel carrier assemblies, an anchor member mountable on a vehicle body at a point thereon between said assemblies; whereby said latch means is selectively engageable with said anchor member to lock said two wheel carrier assemblies in a single vertical plane.

4,282,995

SPARE TIRE BRACKET LOCK FOR PICK-UP TRUCKS AND LIKE VEHICLES

George O. Austin, Phoenix, Ariz., assignor to Wilma D. Austin, Phoenix, Ariz.

Filed Mar. 27, 1980, Ser. No. 134,586

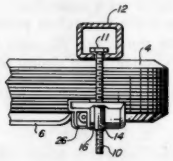
Int. Cl.³ B62D *43/04;* **E05B** *65/12*

U.S. Cl. 224—42.23 **8 Claims**

1. A spare tire bracket lock for deterring theft of a spare tire from a pick-up truck or similar vehicle, the vehicle including an elongated bracket for retaining the spare tire against the undercarriage of the vehicle, the vehicle also including a threaded bolt attached to the undercarriage of the vehicle for

extension through a hole in one end of said elongated bracket, said threaded bolt being engaged by a nut for securing said elongated bracket to said threaded bolt, said nut including a flange having an eye therein, said spare tire bracket lock comprising in combination:

a. a lipped member for sliding over one edge of said elongated bracket, said lipped member engaging an upper surface, a lower surface, and one edge of said elongated bracket; and



b. a slotted member having a slot for slidingly receiving the flange of said nut as said lipped member is slid over the one edge of said elongated bracket, said slotted member being attached to said lipped member for preventing rotation of the flange of said nut, said slotted member permitting a shackle of a padlock to be passed through the eye within the flange of said nut for preventing unauthorized removal of the spare tire.

4,282,996

METHOD OF CONTINUOUS SLITTING OF FLAT MATERIAL AND APPARATUS THEREFOR

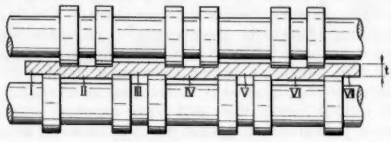
Teizo Maeda, 30-12, Kohinata-2-chome, Bunkyo-ku, Tokyo, and Masao Murakawa, 215, Misono-cho, Kodairo-shi, Tokyo, both of Japan, assignors to Teizo Maeda; Masao Murakawa and Nishimori Kogyo Co., Ltd., Osaka, all of, Japan

Filed Feb. 7, 1977, Ser. No. 766,006

Claims priority, application Japan, Feb. 9, 1976, 51/12401

Int. Cl.[3] **B26F** *3/00;* **B23D** *19/06*

U.S. Cl. 225—2 **18 Claims**



2. A method of cold cutting a strip of flat material, said method comprising the steps of:

(a) feeding said flat material to a first working zone;

(b) subjecting said flat material to a first working action by an opposing pair of cutter disc means disposed in said first working zone to provide a shearing force thereto, wherein the clearance defined between adjacent side faces of said opposing pair of cutter disc means is 0% to −10% of the thickness of said flat material, said shearing force being perpendicular to the surface of said flat material along a longitudinal line parallel to the longitudinal edge of said flat material whereby a partial penetration is formed in said flat material;

(c) feeding said partially penetrated material to a second working zone; and

(d) passing said partially penetrated material through a predetermined spacing between a pair of opposed roller means disposed in said second working zone wherein said partially penetrated material is pressed in a direction opposite to the direction of said shear force by said roller means such that said partially penetrated material is returned to a flat material wherein said material is severed along said line of partial penetration such that said material is cut into strips without burrs on the edges thereof.

4,282,997

APPARATUS FOR REMOVING EXPOSED FILMS AND BACKING STRIPS FROM CASSETTES

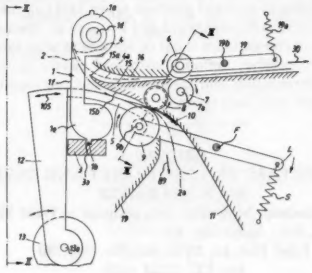
Helmut Zangenfeind, Puchheim, Fed. Rep. of Germany, assignor to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 587,231, Jun. 13, 1975, abandoned, which is a continuation of Ser. No. 399,506, Sep. 21, 1973, abandoned. This application Jun. 7, 1979, Ser. No. 46,499

Claims priority, application Fed. Rep. of Germany, Sep. 22, 1972, 2246671

Int. Cl.[3] **B65H** *17/36*

U.S. Cl. 226—91 **3 Claims**



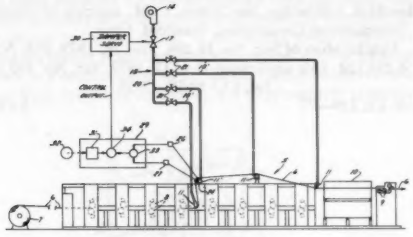
1. Apparatus for removing films and backing strips from containers of the type wherein a casing of the container is provided with registering first and second openings and at least the leader of convoluted backing strip is located between said openings, comprising a pusher movable forwardly and backwards along a predetermined path; locating means arranged to support the casing of a container in such position that the openings of the casing are located in said path whereby said pusher passes, during the forward movement thereof, first through one and thereupon through the other opening of the casing which is supported by said locating means and expels the leader of the backing strip through the other opening; advancing means located behind the other opening of the casing which is supported by said locating means and arranged to engage and advance the expelled leader of the backing strip lengthwise and to thereby draw the film from the casing through the intermediary of the backing strip, said advancing means comprising first and second rotary members located at the opposite sides of said path and means for biasing one of said rotary members against the other of said rotary members; and guide means defining a channel for the leader of the film, said guide means having an inlet adjacent to the other opening of the casing which is supported by said locating means and said guide means comprising deflector means cooperating with the casing which is supported by said locating means to urge successive increments of the backing strip against said deflector means while the backing strip is being moved lengthwise whereby said deflector means automatically introduces the leader of the film into said channel as soon as the leader of the film reaches said deflector means, said pusher having a forward portion about which said leader of said backing strip becomes trained when said pusher expels said leader of said backing strip through said other opening, and one of said rotary members having a peripheral groove into which said portion of said pusher enters during forward movement of said pusher in said path.

4,282,998

MAINTENANCE OF CONSTANT WEB CLEARANCE AT CONTACTLESS TURNING GUIDE

Andres Peekna, Green Bay, Wis., assignor to W. R. Grace & Co., New York, N.Y.

Filed May 9, 1980, Ser. No. 148,197
Int. Cl.³ B65H *17/32*
U.S. Cl. 226—97 **8 Claims**



1. In a contactless web guiding apparatus comprising a turning guide having an exterior curved surface which a running web follows for change in its running direction and having a plenum chamber into which pressurized supply air is fed and from which air issues through outlets that open to said surface to provide a pressurized air cushion between said surface and the web whereby the web is held at a distance from said surface, and controllable means for delivering pressurized supply air to the plenum chamber at an adjustably variable rate, automatic means for so controlling said controllable means as to cause said distance between the web and said surface to be maintained substantially constant notwithstanding variations in web tension, said automatic means comprising:

A. supply pressure sensing means arranged to produce a supply pressure output substantially corresponding to a function of the pressure of supply air in said plenum chamber;

B. cushion pressure sensing means having an inlet at said surface and arranged to produce a cushion pressure output substantially corresponding to a function of the pressure of air in said air cushion;

C. ratio means connected with said supply pressure sensing means and said cushion pressure sensing means to receive their outputs and arranged to produce a ratio signal that corresponds to a function of a ratio relationship between said supply pressure output and said cushion pressure output;

D. demand value means for generating a set-point signal substantially corresponding to a desired value of said distance;

E. comparison means connected with said demand value means and said ratio means for producing a control output substantially corresponding to the prevailing difference between said set-point signal and said ratio signal; and

F. means connected between said comparison means and said controllable means for impressing said control output upon said controllable means.

4,282,999

H-DIVIDER CONTAINERS

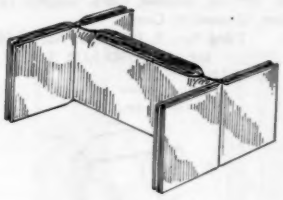
Lenard E. Moen, 7914 Michigan Ave., Whittier, Calif. 90602

Division of Ser. No. 910,198, May 30, 1978, Pat. No. 4,220,076. This application May 27, 1980, Ser. No. 153,276
Int. Cl.³ B65D *5/32, 5/48*
U.S. Cl. 229—15 **15 Claims**

1. A preformed paperboard blank to be erected into an H-divider configuration, said blank comprising a paperboard sheet consisting of a layer sandwiched between a pair of liners and defining:

a pair of divider panels joined together along a hinge line,

a pair of end wall panels at the transversely opposite ends of each of said divider panels and foldably joined to the corresponding one of said divider panels,



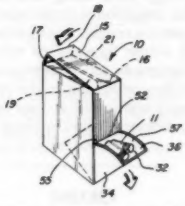
said hinge line comprising a slit score length in which one liner and the corresponding part of said layer are severed, leaving the other liner intact.

4,283,000

SAMPLE HOLDER/DISPENSER

William L. White, Indian Head Park, Ill., assignor to Patrick H. Joyce, Chicago, Ill., a part interest

Filed Feb. 4, 1980, Ser. No. 118,649
Int. Cl.³ B65D *1/22, 5/42*
U.S. Cl. 229—17 B **10 Claims**



1. A dispenser arranged to be carried flat and manually assembled in an erected arrangement for dispensing small articles, said dispenser comprising:

a tubular sidewall having fold lines permitting the sidewall to be collapsed into a flat arrangement and opened into a vertically extending tubular expanded arrangement, a bottom wall hingedly connected to a lower end of said sidewall, means on said bottom wall and sidewall for locking the bottom wall across said lower end of the sidewall with the sidewall disposed in the expanded arrangement thereby to retain the sidewall in the expanded arrangement and define with said sidewall a closed-bottom container for containing a plurality of small articles to be dispensed, said sidewall further defining an opening at said lower end, a closure having a lower end hingedly connected to said bottom wall for selectively closing said opening, and flanges on said closure extending inwardly through said opening and having a stop shoulder on an inner distal portion thereof disposed to engage the sidewall at an edge of said opening to limit the movement of the closure away from said opening to a preselected open position, said closure and flanges cooperatively defining an upwardly open access space when said closure is in said open position;

a top wall hingedly connected to said sidewall above said opening and having a flap portion connected to the distal end thereof at a fold line for retaining the top wall across the top of the tubular sidewall to act as a selectively positionable cover for the dispenser permitting ready refilling of the dispenser as desired; and

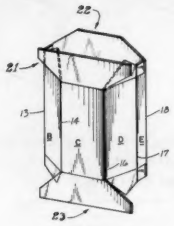
guide means carried on said bottom wall for guiding the small articles from the container outwardly through the opening into said access space.

4,283,001

TUBULAR CARTON WITH POLYGONAL CROSS-SECTION

George L. Meyers, Ashland, Ohio, assignor to American Can Company, Greenwich, Conn.

Filed Nov. 9, 1979, Ser. No. 92,692
Int. Cl.³ B65D *5/36, 5/10*
U.S. Cl. 229—37 R **8 Claims**



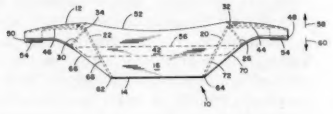
1. A tubular container comprising a plurality of panels bounded and joined by hinge lines and a fastening flap, said container in the erect condition defining a polygon in cross-section, said container being collapsible about predetermined hinge lines, said hinge lines being located at corners of said polygon, into a flat condition without mutilating or separating said panels, one predetermined contiguous set of said panels lying in generally planar face-to-face relation with a second predetermined contiguous set, comprising the remainder, of said panels, when the container is in the recited flat condition, the hinge to hinge dimension of at least one of said panels in said first set being different from the hinge to hinge dimension of each said panel, taken individually, in said second set.

4,283,002

SELF OPENING CARTON

Duane R. Mode, Minneapolis, Minn., assignor to Champion International Corporation, Stamford, Conn.

Filed Oct. 17, 1979, Ser. No. 85,787
Int. Cl.³ B65D *5/42, 25/00*
U.S. Cl. 229—41 R **5 Claims**



1. A container for being shipped as a flat package and erected to form a three dimensional container by applying a force to the sides of said flat package comprising:

a. a base,

b. a cover connected to and superimposed over said base to form a flat, rectangular package for shipping, said cover being integrally formed with said base and including an opening for introducing products into said container when in the erected state, and

c. means formed with said base and said cover in operative relationship to form a three dimensional container from said flat package when force is applied to the side edges of said flat package, said three dimensional forming means comprising:

1. end walls formed in said base,

2. a lip projecting from the outer edge of each end wall,

3. side walls formed in said base,

4. a web formed in said base and hingedly connecting each corner formed by a side wall and an adjacent end wall, and

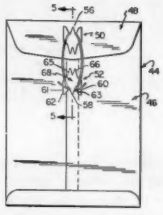
5. a guide panel formed with each end of said cover and each folded under said cover to overlap a portion of each of said end walls whereby said end wall panel lip is forced upwardly as said cover and base separate when a force is applied to the side edges of said flat package thereby forming a three dimensional container.

4,283,003

RECLOSABLE ENVELOPE

Harold R. Lillibridge, San Mateo, Calif., assignor to Champion International Corporation, Stamford, Conn.

Continuation of Ser. No. 16,308, Feb. 28, 1979, Pat. No. 4,234,122. This application Dec. 19, 1979, Ser. No. 105,210
Int. Cl.³ B65D *27/28*
U.S. Cl. 229—77 **2 Claims**



1. A reusable, reclosable envelope comprising:

an enclosed body portion hingedly connected to an overlying flap;

a first tab rigidly connected to the outer surface of said flap by an adhesive;

a second tab rigidly connected to the outer surface of said body portion by an adhesive; and

means for releasably interconnecting said first and second tabs to thereby releasably secure said overlying flap and said body portion, said means including an elongated, flexible member;

said first and second tabs being identical in shape but facing in opposite directions, each tab, also, being complementary in shape to the other by having a first portion adapted to be nestably received and interlocked within a second portion whereby the tabs may be formed in tandem from a single sheet of material each tab including a support portion having two outer elongated fingers and an inner elongated finger spaced about one edge thereof, with the support portion of said second tab facing away from said flap, each of said elongated fingers having a base and at least two opposed sides, the bottom surface of said inner elongated finger being free of adhesive, with the outer elongated fingers extending at least as far as the inner elongated finger to provide support for said second tab and, said bases being integral with said support portion, whereby said flexible member is capable of being releasably received between the bottom surface of said inner elongated finger and the top surface of said body portion.

4,283,004

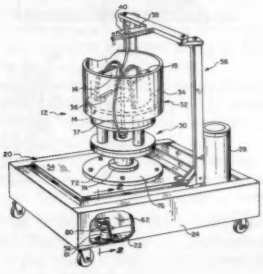
VIBRATION ATTENUATION SUPPORT ASSEMBLY FOR A CENTRIFUGAL LIQUID PROCESSING APPARATUS

Rene G. Lamadrid, Bethesda, Md., assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Aug. 15, 1979, Ser. No. 66,576
Int. Cl.³ B01D *21/26, 43/00*
U.S. Cl. 233—1 C **19 Claims**

1. In a centrifugal liquid processing apparatus of the type which is utilized for separating a liquid containing particles, such as blood, into the components thereof and which includes a cabinet having sidewalls and a floor, a prime mover within

the cabinet, a rotor assembly which is situated within the cabinet and which includes a rotor mounting receptacles thereon, tubing coupled directly between a source of the liquid outside the rotor to the receptacles within the rotor without the use of fluid seals, a non-rotatable arm within the cabinet for holding the tubings and for directing the tubings toward the rotor assembly and rotatable tubing guide means for guiding the tubings from the holder to the rotor, the tubing guide means being mounted for coaxial rotation with the rotor, and the rotor assembly including drive train means for coupling the prime mover to the rotor and to the tubing guide means for rotating the tubing guide means at a first speed and for rotating the rotor at a second speed twice the first speed to prevent the tubings from becoming entangled, the improvement compris-



ing a vibration attenuation support means for supporting the rotor assembly, the non-rotatable arm which is fixed to and forms part of said support means, and the prime mover on the floor of the cabinet and for attenuating the vibrations produced as a result of an unbalanced mass in the rotating parts of the apparatus thereby reducing the transmission of such vibrations to the cabinet, said vibration attenuation support means comprising an attenuation and support assembly including a weldment on which the rotor assembly, the prime mover, and said non-rotatable arm are mounted, and elastomeric means for supporting said weldment on the floor of the cabinet and the ratio of the unbalanced mass to the mass of said weldment, said arm, the rotor assembly and the prime mover being between 1:1000 and 1:10,000.

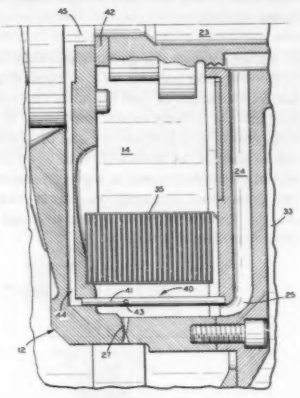
4,283,005

PUMP AND CENTRIFUGAL SEPARATOR APPARATUS

John W. Erickson, Huntington Beach, Calif., assignor to Kobe, Inc., City of Commerce, Calif.

Filed Oct. 1, 1979, Ser. No. 80,379
Int. Cl.³ B04B *1/10, 11/00*
U.S. Cl. 233—47 A **1 Claim**

1. In a centrifugal separator apparatus for separating oil well production fluid into its constituents including a rotatable casing defining a pumping and separating chamber, means for delivering the production fluid to the chamber, means for collecting and discharging a pressurized clean fluid constituent of the production fluid from the casing, and a plurality of radially disposed orifices in the outer periphery of the chamber for discharging solid contaminant matter constituent from the casing, the improvement comprising: means in said casing defining a plurality of generally radially disposed fluid conduits connected at their inner end to the clean fluid collecting and discharging means for diverting a portion of the clean fluid into said radially disposed fluid conduits, a plurality of small diameter pipes mounted in and rotatable with said chamber and disposed in parallel relationship to the axis of rotation of said chamber, said pipes being respectively disposed adjacent to the radially disposed contaminant discharge orifices, each said pipe having at least one orifice in its side wall tangentially directed relative to the chamber periphery, and means in said casing respectively connecting the bores of said pipes to the outer ends of said radially disposed fluid conduits for discharging clean fluid tangentially past the entrance of said radially



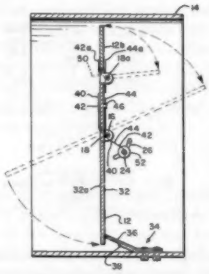
disposed solid contaminant discharge orifice, thereby preventing accumulations of solid contaminants in the vicinity of said orifice.

4,283,006

THERMALLY-ACTIVATED CLOSURE DEVICE

James A. Fedewitz, 222 Cornelia St., Boonton, N.J. 07005

Filed Jul. 10, 1980, Ser. No. 168,308
Int. Cl.³ G05D *23/08*
U.S. Cl. 236—1 G **18 Claims**



15. A thermally-activated device, comprising:

a leaf-type, planar element;

means supporting said element for rotary movement of said element about an axis; and

means engaged with said element for causing rotary movement of the latter from one of two dispositions to the other thereof; wherein

said rotary-movement-causing means comprises a thermally-responsive component which, upon exposure thereof to a prescribed temperature, effects rotary movement of said element from one of said two dispositions to the other thereof;

said closure element comprises a plurality of leaf-type, planar sections; and further including

means joining said sections together, for relative rotary movement therebetween; and

means engaged with said sections for causing rotary movement, of at least one of said sections relative to another section of said plurality thereof, from a first of two dispositions to a second thereof; wherein

said engaged means comprises a thermally-responsive component which, upon exposure thereof to a prescribed temperature, effects rotary movement of said one section from one of said first and second dispositions to the alternative thereof;

and

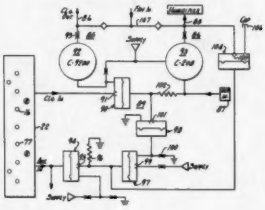
said engaged means comprises a plurality of said thermally-responsive components which, upon exposure of one of said components of said plurality thereof to a prescribed temperature, effects rotary movement of said one section from one of said first and second dispositions to the alternative thereof, as aforesaid, and, upon exposure of a second of said components to a given temperature other than said prescribed temperature, effects rotary movement of said one section from one of said first and second dispositions to another disposition.

4,283,007

MULTIPLE LOAD INTEGRATED FLUID CONTROL UNITS

Scott B. Bramow, Oak Creek; Richard N. Laakaniemi, Hales Corners, and Paul E. Wichman, Brookfield, all of Wis., assignors to Johnson Controls, Inc., Milwaukee, Wis.

Division of Ser. No. 6,865, Jan. 26, 1979, Pat. No. 4,199,101.
This application Nov. 9, 1979, Ser. No. 92,703
Int. Cl.[3] F24F *3/14*
U.S. Cl. 236—44 C **3 Claims**



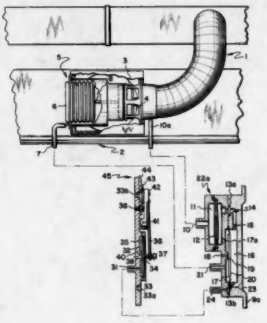
1. A humidity logic control unit for connection to a temperature control unit generating a temperature control signal and an outside air temperature related switchover signal, comprising a first temperature channel having a first input means adapted to be connected to receive the control signal and an output means adapted to be connected to a conditioning means, a second humidity channel having a second input means adapted to be connected to a humidity demand signal source and an output means adapted to control a humidification means, an interlock means operable to connect the second input means to control the output of the first channel conjointly with said first channel input, a switchover fluid repeater having an input chamber adapted to receive said switchover signal and having an output chamber, a first fluid switch having an input chamber adapted to be connected to said fluid repeater and an output chamber connected to said interlock means to selectively actuate said interlock means and thereby control the output of the first channel in accordance with the relative level of signal levels at the first and second inputs, and a second fluid switch having an input chamber adapted to be connected to said fluid repeater to respond to said switchover signal and connected to hold said second channel inactive.

4,283,008

PRESSURIZED SIGNAL CONTROL APPARATUS

H. Kenneth Ring, Jr., Houston, Minn., assignor to The Trane Company, La Crosse, Wis.

Division of Ser. No. 45,527, Jun. 4, 1979, Pat. No. 4,231,515.
This application May 19, 1980, Ser. No. 150,782
Int. Cl.[3] F24F *7/06*
U.S. Cl. 236—49 **9 Claims**



1. In a temperature conditioning system having means for producing pressurized temperature conditioned air, duct means for delivering said air into a space, and means for regulating the flow of said air through said duct means in response to a control signal indicative of the temperature in the space, the improvement comprising

a. housing means for defining a control chamber and an actuator chamber;

b. supply port means in fluid communication with said duct means upstream of said flow regulating means, said supply port means being operative to receive air from said duct means;

c. pressure regulator means in fluid communication with said supply port means, for regulating the pressure of air from said duct means to an essentially constant value;

d. restriction means disposed between said pressure regulator means and said control chamber, for limiting the flow of air from said pressure regulator means into said control chamber;

e. control port means in fluid communication with said control chamber, for receiving said control signal which is to be amplified, said control signal being indicative of the temperature in the conditioned space;

f. first bleed valve means for bleeding air from said actuator chamber, said actuator chamber being in fluid communication with said supply port means;

g. actuator port means in fluid communication with said actuator chamber, for conveying air to actuate said flow regulator means, thereby effecting regulation of air flow in said duct means;

h. diaphragm means forming a common wall of said control chamber and said actuator chamber and operative to close said first bleed valve means in response to the pressure said control signal exerts on said diaphragm means, and to open said first bleed valve means in response to pressure exerted on said diaphragm means in said actuator chamber, said pressure acting thereon in opposition, whereby the pressure of air at said actuator port means is made essentially equal to the pressure of said control signal, though having a larger available volume of flow;

i. second bleed valve means in fluid communication with said control port means, for bleeding air from said control port means; and

j. temperature responsive means for controlling the flow of air out said second bleed port means in response to the temperature of said space.

5. In a temperature conditioning system having means for

producing pressurized temperature conditioned air, duct means for delivering said air into a space, and means for regulating the flow of said air through said duct means in response to a control signal indicative of the temperature in the space, the improvement comprising

a. first housing means for defining a control chamber and an actuator chamber;

b. supply port means in fluid communication with said duct means upstream of said regulating means, said supply port means being operative to receive air from said duct means;

c. restriction means disposed between said supply port means and said control chamber, for limiting the flow of air from said supply port means into said control chamber;

d. control port means in fluid communication with said control chamber, for receiving said control signal which is to be amplified, said control signal being indicative of temperature in the conditioned space;

e. first bleed valve means for bleeding air from said actuator chamber, said actuator chamber being in fluid communication with said supply port means;

f. actuator port means in fluid communication with said actuator chamber, for conveying air to actuate said flow regulator means, thereby effecting regulation of air flow in said duct means;

g. first diaphragm means forming a common wall of said control chamber and said actuator chamber, and operative to close said first bleed valve means in response to the pressure said control signal exerts on said first diaphragm means, and to open said first bleed valve means in response to pressure exerted on said first diaphragm means in said actuator chamber, said pressures acting thereon in opposition, whereby the pressure of air at said actuator port means is made essentially equal to the pressure of said control signal, though having a larger available volume of flow;

h. thermostat means for generating said control signal responsive to temperature in said space and including

i. second housing means for defining a chamber;

ii. port means in fluid communication with said control port means, for receiving air from said control chamber and for transmitting said control signal, said control signal changing pressure in response to the temperature in said space;

iii. second bleed valve means for bleeding air from said chamber;

iv. second diaphragm means forming a wall of said chamber and operative to control the flow of air out said second bleed valve means, and to open said second bleed valve means in response to pressure exerted upon said second diaphragm means by air from said control port means, thereby causing said control signal to be essentially independent of changes in air pressure in said duct means; and

v. temperature responsive means adjacent said second diaphragm means for directly exerting a force thereon, thereby biasing said second bleed valve means to close in response to a change in the temperature.

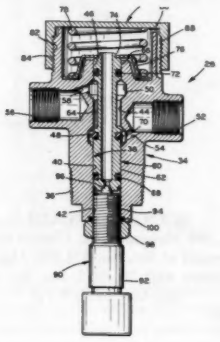
4,283,009

CONTROL VALVE FOR FLUID-OPERATED CLUTCH

Brian C. Deem, Avon Lake, Ohio, assignor to The Bendix Corporation, Southfield, Mich.

Filed Feb. 7, 1980, Ser. No. 119,338
Int. Cl.[3] G05D *23/12*
U.S. Cl. 236—86 **10 Claims**

1. A valve for causing engagement and disengagement of a fluid-actuated clutch in response to the temperature of a fluid which varies according to the engaged or disengaged condition of said clutch, said valve comprising a housing having a central internal passage extending therethrough, said passage having an intermediate bore therein, said housing having an inlet passage communicating with one end of said bore and an outlet passage communicating with the other end of said bore, said central passage having an end bore therein in line with said intermediate bore and communicating with said inlet passage from the side opposite said intermediate bore, said central passage having an exhaust bore communicating with said outlet passage from the side opposite said intermediate bore, a moveable valve spool in said central passage, a first elastomeric sealing member carried by one of said valve spool and said end bore in a first predetermined position, a second elastomeric sealing member carried by one of said valve spool and said intermediate bore in a second predetermined position on one side of said first sealing member, a third elastomeric seal carried by one of said valve spool and said exhaust bore in a third predetermined position on the side of said second sealing member opposite said first sealing member, said valve spool being moveable in said central passage among a first condition in which said third sealing member seals said exhaust bore, said intermediate bore is open, and said first sealing member seals said end bore, a second condition in which said second sealing member seals said intermediate bore, said third sealing member seals said exhaust bore, and said first sealing member seals said end bore, and a third condition in which said second sealing member seals said intermediate bore, said exhaust bore is open, and said first sealing member seals said end bore, temperature-responsive means for moving said spool in one direction in said central passage, and resilient means for urging said spool in the opposite direction in said central passage.

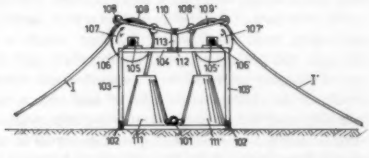


4,283,010

METHOD AND APPARATUS FOR IRRIGATION OF FIELDS BY MEANS OF FLEXIBLE HOSES

Amatzia Arzi, Doar Na Taanach, Ram'on, Israel, and David Chiel, Afulah, Israel, assignors to Amatzia Arzi, Ram'on and Metal Works Ramat David, Ramat David, both of, Israel

Filed Aug. 16, 1979, Ser. No. 67,233
Claims priority, application Israel, Apr. 9, 1979, 57026
Int. Cl.[3] B05B *3/18*; B65H *75/34*
U.S. Cl. 239—1 **8 Claims**



1. A method of irrigating a field by means of flexible hoses, comprising the following steps:

laying and stretching at least two hoses in their entire length, in a parallel spaced apart relationship, on a field to be irrigated;

supplying water under pressure to the rear of said hoses and

causing the water to escape through the completely open front ends of said hoses;

pulling said hoses and moving said open front ends over the ground in rearward direction by means of a transportable mechanical hose-moving device positioned proximate said rear ends of said hoses, at a velocity proportional to the water volume passing through said hoses, while water is caused to flow out of said open front ends;

gathering the portions of said hoses that have passed through said hose-moving device; and

stopping the water supply to said rear ends of said hoses as soon as said front ends have reached said hose-moving device.

4,283,011

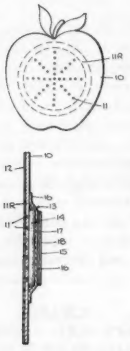
SCENTED STICKER

Donald Spector, 380 Mountain Rd., Union City, N.J. 07087

Continuation-in-part of Ser. No. 971,380, Dec. 20, 1978. This application Aug. 28, 1979, Ser. No. 70,512

Int. Cl.[3] **A61L** *9/12*

U.S. Cl. 239—36 **4 Claims**



1. A scented sticker attachable to an article of clothing or other surface, each sticker comprising:

A an applique sheet profiled to simulate an odoriferous object and formed of metal foil conformable to said surface, said sheet having a perforated zone thereon;

B a dish assembly constituted by a shallow dish having a flat base and a flange, said flange being bonded to a ring zone on the rear face of the applique sheet which surrounds the perforated zone to define a chamber which is vented through said perforated zone, an absorbent pad disposed in said chamber saturated with a volatile scent whose odor simulates the characteristic odor of said object, said dish assembly and said applique sheet being impervious to said volatile scent, and a layer of pressure-sensitive adhesive on said base to attach the base of said dish to said surface, said layer being covered by a removable release paper; and

C a removable seal formed of transparent film material impervious to said volatile scent having a pressure-sensitive adhesive coating thereon secured to said applique sheet to cover said apertured zone to prevent emission of said scent until the seal is removed.

4,283,012

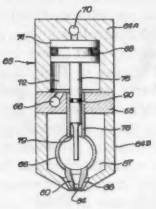
SELF-CLEANING NOZZLE CONSTRUCTION FOR PRODUCT ENROBING APPARATUS

Harold W. Hanson, Newport Beach, Calif., assignor to Par-way Mfg. Co., Newport Beach, Calif.

Filed Oct. 31, 1979, Ser. No. 90,040

Int. Cl.[3] **B05B** *15/02;* **B05C** *5/00*

U.S. Cl. 239—118 **18 Claims**



1. An enrobing apparatus for applying an ingredient spray to food products comprising:

an ingredient tube for carrying a food ingredient to be sprayed;

a spray air tube for carrying spray air to assist in the spraying of said ingredient;

a housing;

a nozzle opening within said housing, said nozzle opening including an inner orifice for said ingredient and an annular outer orifice surrounding said inner orifice for said spray air;

a spray air passage connecting said spray air tube to said outer orifice;

an ingredient passage connecting said ingredient tube to said inner orifice;

a cylinder defined by said housing on the opposite side of said ingredient tube from said nozzle opening;

a piston reciprocable within said cylinder;

first and second air ports entering said cylinder on opposite sides of said piston;

first and second control air passages connected to said first and second air ports, respectively, for supplying compressed control air to said cylinder to cause reciprocation of said piston; and

a clean-out plunger connected to said piston and aligned with said inner orifice to enter and clean said inner orifice upon reciprocation of said piston.

4,283,013

DISPENSER FOR A LIQUID PRODUCT

Jean-Luc Leveque, Montfermeil; Alain Guiolet, Paris, and Jean-Claude Garson, Aulnay-sous-Bois, all of France, assignors to L'Oreal, Paris, France

Filed Apr. 26, 1978, Ser. No. 900,311

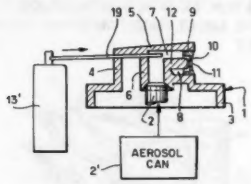
Claims priority, application France, Apr. 26, 1977, 77 12568

Int. Cl.[3] **B65D** *83/14*

U.S. Cl. 239—304 **12 Claims**

1. A liquid product dispenser comprising a pressurised container containing a liquid product to be dispensed and a pressurised gas for discharging the liquid product from the container, outlet means on said container through which the liquid product is discharged, and dispensing means connected to said outlet means and comprising (a) a spray nozzle supplied with liquid product from said outlet means and having an ejection orifice, (b) injection duct means having an outlet disposed upstream of said ejection orifice of said nozzle for supplying additional compressed gas to mix with and dispense said prod-

uct through said ejection orifice, and (c) a further container containing a liquefied gas to serve as said additional com-



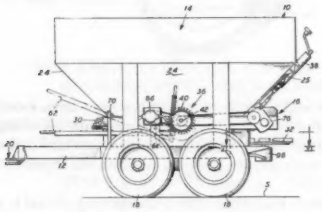
pressed gas, said further container being connected to said injection duct means.

4,283,014

MOBILE SPREADER APPARATUS DRIVE SYSTEM

Dwight F. Devorak, P.O. Box 268, Hazen, Ark. 72064

Filed Apr. 9, 1979, Ser. No. 28,243
Int. Cl.³ A01C *17/00*
U.S. Cl. 239—677 **13 Claims**



13. In a wheeled-mobile spreader apparatus the improvement of a self-cleaning friction drive comprising:

a power train having a rotatable transfer shaft;

a movable metal driving wheel connected to said shaft and adjusted to be selectively engaged with a ground wheel, said driving wheel comprising a rim member,

a row of transverse cleats spaced circumferentially about said rim member and projecting radially outwardly thereof sufficient so that the cleats are urged against the adjoining ground contacting surface of the ground wheel to penetrate dirt and debris adhering to the surface and to achieve positive driving contact with the ground wheel and said cleats extend axially outward beyond the metal wheel and have spaces between them allowing dirt and debris to pass so that said drive wheel is essentially self-cleaning.

4,283,015

APPARATUS FOR REMOVING NO-BAKE COATINGS FROM FOUNDRY SAND, AND CLASSIFYING THE RECLAIMED SAND ACCORDING TO PARTICLE SIZE

William J. Smith, Hazelton, Pa., assignor to Weatherly Foundry & Manufacturing Co., Weatherly, Pa.

Continuation-in-part of Ser. No. 847,749, Nov. 2, 1977, abandoned. This application Feb. 26, 1979, Ser. No. 15,206
Int. Cl.³ B02C *19/06*
U.S. Cl. 241—5 **3 Claims**

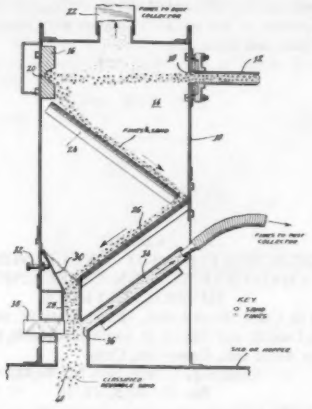
1. A method for removing no-bake rigid coatings from foundry sand and classifying the reclaimed sand according to particle size, which comprises the steps of,

crushing no-bake foundry sand lumps into grain sized no-bake coated sand grains,

fluidizing said coated sand grains in a stream to a velocity just sufficient for pneumatic transport,

pneumatically transporting said coated sand particles to a point where reclaimed and classified sand is to be used, and without accelerating said coated sand particles to higher velocity,

directing said fluidized sand particles at a target transversely



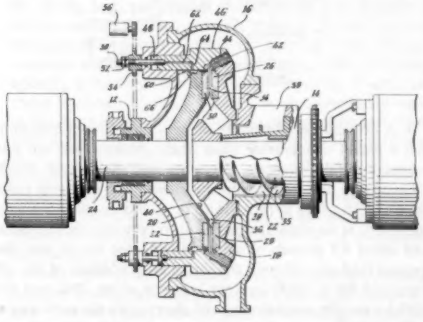
disposed in said stream to cause the rigid no-bake coatings encasing the sand grains to fracture on impact with said target to provide uncoated sand grains and no-bake coating particles, and thereafter separating the re-usable sand grains and the no-bake coatings.

4,283,016

METHOD AND APPARATUS FOR CONTROLLING THE EFFECT OF THE CENTRIFUGAL FORCE ON THE STOCK IN PULP DEFIBRATING APPARATUS

Rolf B. Reinhall, 834, 171st Pl., NE., Bellevue, Wash. 98008

Filed Mar. 16, 1979, Ser. No. 21,184
The portion of the term of this patent subsequent to Mar. 3, 1998, has been disclaimed.
Int. Cl.³ B02C *7/12*
U.S. Cl. 241—21 **9 Claims**



1. In the method of refining pulp stock in which the pulp material to be ground is introduced into a grinding space including a first grinding zone defined between a first grinding disc opposing a second grinding disc having ridges and grooves providing grinding surfaces, which discs rotate relative to each other in an environment of fluid medium in a housing, and in which first grinding zone the pulp material is accelerated outwardly by the centrifugal force generated by the rotational movement of the rotatable disc,

the improvement for controlling the effect of the centrifugal

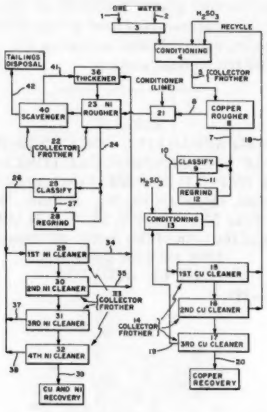
force on the pulp comprising; p1 providing a second grinding zone extending angularly from said first grinding zone for receiving the pulp accelerated through said first grinding zone and changing its direction of flow, said second grinding zone being defined between said first rotatable disc and a stationary grinding surface on at least a portion of the surface of a stationary element mounted within said housing.

4,283,017

SELECTIVE FLOTATION OF CUBANITE AND CHALCOPYRITE FROM COPPER/NICKEL MINERALIZED ROCK

Robert D. Coale, Hoyt Lakes, Minn.; Keith W. Sarbutt, Lakefield, Canada, and Derrick B. Smith, Oceanside, Calif., assignors to Amax Inc., Greenwich, Conn.

Filed Sep. 7, 1979, Ser. No. 73,413
Int. Cl.³ B02C *23/18*
U.S. Cl. 241—24 **12 Claims**



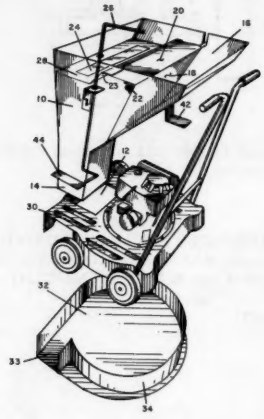
1. A process for selectively recovering a copper concentrate and a nickel concentrate from finely ground feed ore which contains sulfide minerals of copper and nickel and which is substantially free from carbonate minerals, comprising pulping the ore with water to provide a slurry, adding sulfurous acid to the slurry in an amount equivalent to between about 2 pounds and about 4.5 pounds of sulfur dioxide per ton of said finely ground feed ore, wherein the slurry after addition of the sulfurous acid has a solids content between about 25% and about 35% by weight, conditioning the slurry with the sulfurous acid sufficiently long to allow the copper sulfide minerals to be floated selectively from the nickel sulfide minerals, adding a collector and a frother to the conditioned slurry, subjecting the conditioned slurry to froth flotation to produce a froth containing a copper rougher concentrate and an underflow copper rougher tailing, conditioning the copper rougher tailing to activate unfloated copper and nickel minerals, adding additional frother and collector to the copper rougher tailing, and then subjecting the copper rougher tailing to froth flotation to produce a froth containing a copper-nickel rougher concentrate.

4,283,018

SHREDDING ACCESSORY FOR ROTARY LAWN MOWER

Alyre J. Richard, 521 Knox St., Rumford, Me. 04276

Filed Nov. 26, 1979, Ser. No. 97,436
Int. Cl.³ B02C *18/22*
U.S. Cl. 241—101.1 **3 Claims**



1. An improved shredder for a rotary type lawn mower of the type having an open-topped hopper with an elongated basin and a lower portion entering into an aperture defined in the top of the lawn mower housing, wherein the improvements comprise:

a pivot member extending across the opening of said hopper;

a hopper entry door mounted within the top opening of said hopper rotatably affixed to said pivot member and adapted for the entry of materials into said hopper;

a basin entry door also mounted on said pivot adapted to swing inwardly to allow entry of materials from said elongated basin of said hopper;

a window unit disposed in said open-topped hopper allowing safe viewing of the progress of the shredding;

said hopper entry door and basin entry door when closed along with said window unit adapted to close the top of said hopper;

a tamper member adapted to move up and down within said hopper and within the mower housing; and

a tamper bracket member adapted to support said tamper when lifted in an upward inactive position.

4,283,019

LACER ARM FOR A WINDING MACHINE

Peter Gujer, Winterthur, Switzerland, assignor to Rieter Machine Works, Ltd., Winterthur, Switzerland

Filed Aug. 29, 1979, Ser. No. 60,590
Int. Cl.³ B65H *54/02, 67/04*
U.S. Cl. 242—18 A **15 Claims**

1. A winding machine comprising

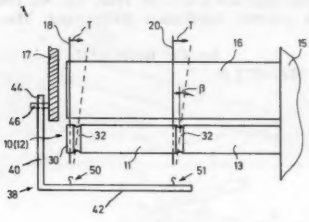
a rotatable carrier head having a longitudinal axis;

a plurality of chucks rotatably mounted on said carrier head and disposed in parallel on said carrier head for rotary movement between a winding position and a doffing position, each chuck having filament take-up means for catching at least one filament presented thereto and being adapted to removably mount a bobbin thereon for receiving a filament thereon in said winding position;

filament infeed means for passing filament to a bobbin carried on a chuck in said winding position and such that in normal operation a take-up length of filament extending between said filament infeed means and a chuck moving

from said winding position is presented to a second chuck moving to said winding position in a menner enabling the take-up length to be taken up on said take-up means on said second chuck, and

lace-up means movable, during lacing of the machine prior to normal operation thereof, from a position outside the



working zone of the machine to a position inside said zone to hold at least one filament between said lace-up means and said filament infeed means so that the length of filament extending between said lace-up means and said infeed means can be taken up by a chuck moving to said winding position.

4,283,020

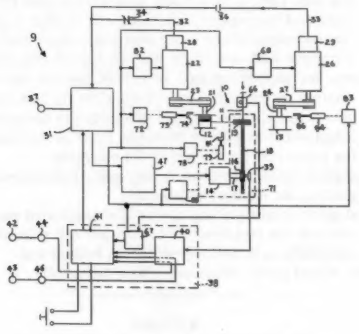
ELECTRONIC CONTROL SYSTEM FOR RECIPROCATING MECHANISM

William A. Bauer, Bel Air; Charles R. Frohlich, Jr., Kingsville; Raymond H. Griffin, Baltimore County, and Joseph G. Henderson, Bel Air, all of Md., assignors to Western Electric Co., Inc., New York, N.Y.

Filed Sep. 17, 1979, Ser. No. 76,003

Int. Cl.[3] B65H *54/28*

U.S. Cl. 242—25 R **11 Claims**



1. A system for controlling the movement of a reciprocating mechanism between spaced end-points along a path of travel of the mechanism, which comprises:

means for driving the reciprocating mechanism;

means responsive to movement of the driving means for developing a voltage signal of varying instantaneous levels representative of instantaneous positions of the reciprocating mechanism along the path of travel thereof;

means for establishing a pair of voltage signals at selected levels representative of respective end-points of travel of the reciprocating mechanism;

means responsive to the coincidence of the instantaneous voltage signal and one of the pair of the end-point signals for developing a reversal signal; and

means for applying the reversal signal to the driving means to reverse the direction of travel of the reciprocating mechanism.

4,283,021

AUTOMATIC FILM RETRIEVER

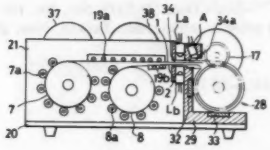
Shigeki Nishida, Kainan, Japan, assignor to Noritsu Koki Co., Ltd., Wakayama, Japan

Filed Jun. 13, 1979, Ser. No. 48,227

Claims priority, application Japan, Jun. 17, 1978, 53-73956; Sep. 5, 1978, 53-108105

Int. Cl.[3] B65H *75/02*

U.S. Cl. 242—55 **6 Claims**



1. An automatic film retriever characterized in that the same is comprised of

a. a cartridge loading part having an insertion opening into which a film retrieving opening of the cartridge is inserted at one side thereof, a guide hole passage with a narrow clearance connected thereto and in addition a cartridge fixing member,

b. separate motors which are arranged at the side opposite to said one side against said cartridge loading part and which may be rotated either in a clockwise or in a counter-clockwise direction,

c. one first belt-like retriever plate of a resilient material of which the free end is moved forward or backward into said insertion opening through the guide hole passage by one of said motors, inserted into the cartridge through the film retrieving opening of the cartridge fixed at a cartridge loading part, and thereby set to hold a free end of the film which has already been rewound in the cartridge,

d. a second retriever plate of which the free end is contacted along a lower surface of said first retriever plate, moved forward or backward into said insertion opening through the guide hole passage by the other of said motors, a leading end of the free end of the second retriever plate being made to form a folded part which is folded toward a central portion of the cartridge of which film retrieving opening is inserted into the insertion opening of said cartridge loading part and fixed therein, the plate being made of the same material as said first retriever plate and set to hold a free end of the film along with the first retriever plate,

e. a torque motor to be engaged with a spool of the cartridge when the cartridge is firmly held at said cartridge loading part and enabling the spool of the held cartridge to be rotated either in a clockwise direction or in a counter-clockwise direction,

f. a sound wave sensor mounted near said insertion opening in order to sense a sound generated when a free end of the film is moved past a folded part of a leading end of the second retriever plate which is slightly inserted into the cartridge through the film retrieving opening and to reverse a direction of rotation of said torque motor when the spool is rotated by said torque motor in a film winding direction after the free end of said first retriever plate is inserted into the cartridge through the film retrieving opening of the cartridge which is fixed to said cartridge loading part, whereby

the first and second retriever plates are inserted in sequence through the film retrieving opening into the cartridge fixed to the cartridge loading part and thus the free end of

the film which has already been wound in the cartridge may be pulled out of the cartridge while being held between the two plates.

4,283,022

DOUBLE-VOLUMED TAPE CARTRIDGE OPERATIVE AT TWO ENDS

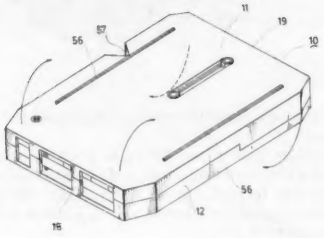
Kuen-Ming Chen, 13, Alley 2, La. 58, Chienmei Rd., Hsinchu City, Taiwan

Filed Dec. 19, 1979, Ser. No. 105,262

Claims priority, application Taiwan, Nov. 26, 1979, 6824586 R.O.C.

Int. Cl.³ B65H *17/48*

U.S. Cl. 242—55.19 A **9 Claims**



1. A tape cassette comprising:

a cassette housing consisting of two substantially identical sections, one of said sections having a first slot therein;

at least one tape transport mechanism in one of said sections, said transport mechanism including a pair of reel bases, a pair of reel spindles and a first guide rod, said pair of reel bases being loaded on said reel spindles and said first slot being positioned between said reel spindles of said pair of reel spindles;

two further guide rods located within said slot;

a first plate extending between said further rods and having a second slot therein, said second slot being positioned to receive tape;

a second plate on a reel loaded on one of said reel bases and rotatable accompanying said reel; and

a rubber roller and two pressure pads defining with said first guide rod and said second slot a tape path;

wherein the other of said two substantially identical sections has a further first slot therein;

at least one further tape transport mechanism in the other of said sections, said further transport mechanism including a further pair of reel bases, a further pair of reel spindles and a further first guide rod, said further pair of reel bases being loaded on said further pair of reel spindles and said further first slot being positioned between said reel spindles of said further pair of reel spindles;

two additional further guide rods located within said further first slot;

a further first plate extending between said two additional further guide rods and having a further second slot therein, said further second slot being positioned to receive another tape;

a further second plate on a further reel loaded on one of said reel bases of said further pair of reel bases and rotatable accompanying said further reel; and

a further rubber roller and two additional pressure pads defining with said further first guide rod and said further second slot another tape path.

4,283,023

WINDER APPARATUS FOR A PAPER MACHINE

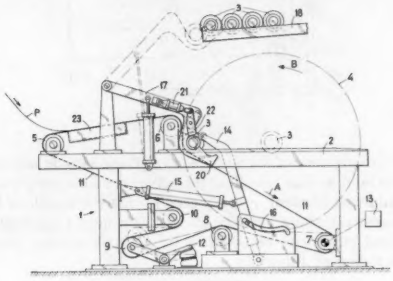
Heinz Braun, Ravensburg; Karl Kiesel, Mochenwangen, and Wolf-Gunter Stotz, Ravensburg, all of Fed. Rep. of Germany, assignors to Escher Wyss GmbH, Ravensburg, Fed. Rep. of Germany

Continuation of Ser. No. 970,623, Dec. 18, 1978, abandoned. This application Oct. 20, 1980, Ser. No. 198,806

Claims priority, application Switzerland, Mar. 22, 1978, 3126/78

Int. Cl.³ B65H *17/14*

U.S. Cl. 242—67.1 R **9 Claims**



1. A winder apparatus for a papermaking machine comprising:

a reel-spool for winding up an infed paper web thereon so as to form a paper roll;

an endless band arrangement for guiding the paper web onto the reel-spool by taking-up said web prior to the web contacting said reel-spool and for winding said paper web thereon in the form of said paper roll;

guide means for guiding said endless band arrangement such that said band arrangement wraps about part of the reel-spool and the paper roll wound thereon over a part of the circumference thereof and thus places such reel-spool or the paper web wound on such reel-spool into rotation;

means for supporting said reel-spool against the band for rotation thereby, the support means being constructed for movement of the reel-spool in a direction transverse to its longitudinal axis away from the band as the diameter of the paper reel on the reel-spool increases;

said guide means constituting only guide rolls for exclusively guiding the band arrangement;

said guide means guiding the band arrangement such that it contacts the reel-spool and the paper roll wound thereon essentially only laterally and from below; and

one of said guide rolls serving as a drive roll.

4,283,024

MATERIAL PROCESS MACHINERY

Henry R. Sienkiewicz, Stamford, Conn., assignor to Spadone Machine Company, Inc., Norwalk, Conn.

Filed Jan. 15, 1980, Ser. No. 112,215

Int. Cl.³ B65H *23/16, 59/36*

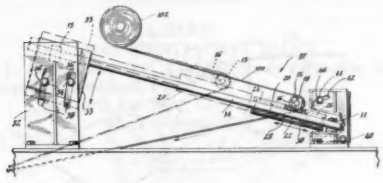
U.S. Cl. 242—75.3 **3 Claims**

1. A device for compensating for slack variations in a moving continuum of material without inducing tensional variations in said material significantly beyond pre-determined limits, comprising

a material contact element adapted for having a portion of the surface thereof contacted by a contiuum of material immediately after said material has traveled along a first travel path, said first travel path being at an angle of less than 180° with respect to the path traveled by said material as it moves away from contact with said element, said element being circular in cross-section and rotatably

mounted upon one end of a shaft which extends out from, and the opposite end of which is affixed to, a support means for supporting said shaft, said support means comprising parallel, spaced-apart bushings, the axes of which are normal to said shaft,

a support frame comprising parallel shafts, each of which moveably resides in a different one of said bushings by



which support frame said support means is supported in linearly moveable relationship thereto in a direction normal to the axis of said shaft,

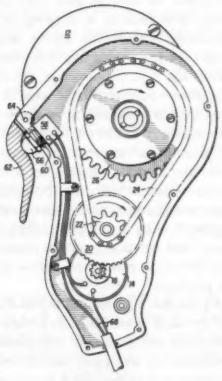
said support frame being positioned at an incline with respect to horizontal, so that the ability of said support means to move down said incline in response to gravitational forces is dependent upon increased slack in said material where it contacts said element.

4,283,025

MOTORIZED ATTACHMENT FOR A FISHING REEL

Kelsie C. Whisenhunt, 72 Coleman St., Edgewater, Fla. 32032

Filed Dec. 17, 1979, Ser. No. 104,534
Int. Cl.[3] A01K *89/0.017*
U.S. Cl. 242—84.1 A **5 Claims**



2. A motorized attachment for a fishing reel having a frame including a removable member, a reel driving shaft with a removable crank handle thereon and a drag adjusting means surrounding said shaft, said attachment comprising:

a casing adapted to be secured to said reel frame when said handle and said removable member are removed from said reel, said casing having a motor therein and a drive train including a one-way drive adapted to be connected to said reel driving shaft;

a shaft extension in said casing adapted to be attached to said reel driving shaft and having means for mounting said crank handle thereon, outwardly of said casing; and

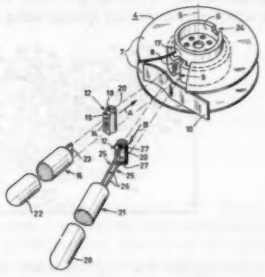
means in said casing for selectively actuating said drag adjusting means of said reel and including a manually operable member adjacent the outer end of said shaft extension.

4,283,026

MAGNETIC TAPE CASSETTE

Franz Werner, Vienna, Austria, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 8, 1979, Ser. No. 64,921
Claims priority, application Austria, Aug. 14, 1978, 5919/78
Int. Cl.[3] B65H *75/28;* **G03B** *1/04;* **G11B** *15/32*
U.S. Cl. 242—199 **10 Claims**



7. A tape cassette comprising a housing, two winding reels disposed in the housing and rotatable about parallel axes of rotation, each reel having a winding hub and a flange at each end of the winding hub,

each winding hub having an axis of rotation defining an axial direction, a generally cylindrical outer wall adapted for winding a tape thereon, and a recess in said wall extending generally in said axial direction for receiving an end of a tape to be wound on the hub, and

a deformable clamping member arranged to be pressed into said recess for fixing the end of a tape wound on the hub,

characterized in that the cassette housing and reels are arranged such that the clamping members are accessible only through a space between the reel flanges,

each clamping member has a wall side facing away from said axis of rotation,

characterized in that the clamping member has a wall side facing away from said axis of rotation, said wall side being generally cylindrical about said axis and having a tool recess extending toward said axis, said tool recess being adapted for insertion of an assembly tool therein,

the clamping member further comprises means permitting deformation of the member while an assembly tool is inserted in the tool recess so that the member can be pressed in a radial direction towards said axis into the hub recess, and

the clamping member has a length in the axial direction at least as small as the distance between the flanges of the respective reel, whereby the clamping members can be inserted and removed radially from between the reel flanges.

4,283,027

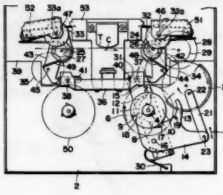
TAPE FEEDER IN A TAPE RECORDER

Kyohei Naito, Tokyo, Japan, assignor to Shinwa Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 31, 1980, Ser. No. 135,218
Claims priority, application Japan, Apr. 3, 1979, 54/43676[U]
Int. Cl.[3] G03B *1/04;* **G11B** *15/32*
U.S. Cl. 242—208 **1 Claim**

1. A tape feeder in a tape recorder comprising: a pair of reel support drive gears mounted on a pair of reel supports; a pair of tape winding gears capable of being brought into or out of mesh with the corresponding reel support drive gears; a pair of capstans driven by a motor for rotating the corresponding tape winding gears; a pair of pinch rollers connected to a head base plate and capable of being brought into and out of pressing

engagement with the corresponding capstans; a pair of reverse action members rotatably supported on the corresponding capstan bearing, said reverse action members having the tape winding gear rotatably supported at one end thereof and having a cam groove formed at the other end thereof, said cam groove being adapted for receiving the shaft of the pinch roller to bring the pinch roller into or out of pressing contact with the capstan; a pair of springs provided to the corresponding reverse action members, said springs being adapted to press the



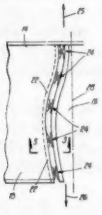
pinch roller against the capstan when the head base plate advances and at the same time urge the tape winding gear to mesh with the reel support drive gear; and a slider member slidably provided between the pair of reverse action members, said slider member being slid, when the tape winding is completed, toward the reverse action member on that side where the tape has been wound so as to push one end of that reverse action member against the force of the spring and at the same time release the other reverse action member.

4,283,028

ADJUSTABLE WEDGE FITTING FOR SHARING THE THRUST LOAD OF A JET ENGINE

William H. Wilke, Wichita, Kans., assignor to The Boeing Company, Seattle, Wash.

Filed Dec. 3, 1979, Ser. No. 99,472
Int. Cl.[3] B64D 27/16
U.S. Cl. 244—54 **5 Claims**



1. An adjustable wedge fitting for sharing the thrust load of a jet engine, the fitting adapted for mounting on an air frame strut and a fan duct cowl of a jet engine nacelle, the fitting comprising:

a bracket adapted for attaching to the side of the air frame strut;

a wedge attached to the bracket and vertically adjustable thereon; and

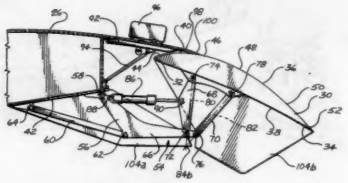
a wedge receiver adapted for attaching to the side of the fan duct cowl, the wedge receiver having a tapered groove integrally formed therein, the wedge when lowered on the bracket received in the tapered groove of the wedge receiver.

4,283,029

ACTUATING APPARATUS FOR A FLAP SYSTEM HAVING AN UPPER SURFACE BLOWING POWERED LIFT SYSTEM

Peter K. C. Rudolph, 13683 18th Ave. SW., Seattle, Wash. 98166

Filed Jan. 2, 1979, Ser. No. 118
Int. Cl.[3] B64C 9/02, 9/16
U.S. Cl. 244—215 **16 Claims**



1. In an aircraft having:

a. an airfoil having a leading edge, a substantially non-adjustable trailing edge, an airfoil chordwise axis, an airfoil upper aerodynamic surface and a rear cove portion with a rear cove edge at a trailing edge of said airfoil aerodynamic surface,

b. a flap member having a forward end, a rear end, a flap chordwise axis, and a flap upper aerodynamic surface, said flap member moveable between a stowed position in the cove portion of the airfoil with the flap chordwise axis being in general alignment with the airfoil chordwise axis, and a fully deployed position where the flap member extends downwardly from the rear cove edge,

c. said flap upper surface having a contact area adapted to remain adjacent said rear cove edge as the flap member is moved between its stowed and fully deployed positions, said contact area having a varying radius of curvature which increases rearwardly along said chordwise axis, and a contact location which is that portion of the contact area adjacent the rear cover edge at any flap position,

an actuating apparatus adapted to be used in conjunction with an upper surface blown powered lift system for said aircraft to move said flap member between its stowed position and its fully deployed position to intermediate positions between the stowed and fully deployed positions, in a manner that as the flap member rotates rearwardly or forwardly the upper flap surface is maintained in substantially constant contact with and in general alignment with the trailing edge of the airfoil aerodynamic surface, said actuating means comprising:

a. a mounting structure positoned below said flap member in its stowed position,

b. a forward positioning link having a lower end pivotally connected to said mounting structure at a lower first forward location and an upper end pivotally connected to said flap member at an upper second forward location,

c. a rear positioning link having a lower end pivotally connected to said mounting structure at a lower third rear location and an upper end pivotally connected to said flap member at an upper fourth rear location,

d. said second and fourth location being spaced from each other by a first greater distance, and said first and third locations being spaced from each other by a second lesser distance, in a manner that with said flap member in its stowed position, said links extend upwardly from said mounting structure divergently from one another,

e. said first, second, third and fourth locations being so positioned that with said flap member in its stowed positon, a first line drawn through said first and second locations and a second line drawn through said third and fourth locations meet at a center point which is an instantaneous center of rotation of said flap member, and said instantaneous center of rotation shifts during movement of said flap member between its stowed and deployed posi-

tions in a manner to compensate for variations in curvature of the flap surface contact area, so as to maintain the contact location of said contact area in a position adjacent said rear cove edge,

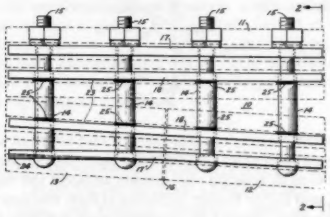
f. the actuating apparatus being characterized in that the actuating apparatus itself provides main compensation for the curvature of the upper flap surface.

4,283,030

RAILWAY SWITCH HEEL BLOCK

Frank P. Bobb, Camp Hill, Pa., assignor to Bethlehem Steel Corporation, Bethlehem, Pa.

Filed Feb. 20, 1980, Ser. No. 122,928
Int. Cl.³ E01B 7/10
U.S. Cl. 246—468 **5 Claims**



1. In a railway switch heel block structure including a stock rail, a fixed closure rail, a movable switch point rail and a heel block; the heel block having a first pair of flat joint bars adjacent and substantially parallel to the outside of the webs of said rails and a second pair of flat joint bars adjacent and substantially parallel to the inside of the webs of said rails , with an upper surface of said joint bars bearing against the underside of the head of said rails and a lower surface of said joint bars bearing against the base flange of said rails, the webs of said rails being formed with bolt holes and said joint bars being formed with transversely aligned bolt holes to register with the bolt holes through said webs; the improvement comprising:

a preassembled integral heel block unit having pipe separator thimbles fixed to said second pair of flat joint bars and extending completely therethrough, and clamp bolts extending through said separator thimbles and said first and second pairs of flat joint bars and said rail webs for clamping said flat joint bars and said rails in a rigid structure.

4,283,031

SYSTEM CONTROLLING APPARATUS WhICH COMPARES SIGNALS FROM SENSORS MONITORING PASSING OBJECTS WITH PRE-DETERMINED PARAMETER INFORMATION TO CONTROL THE SYSTEM

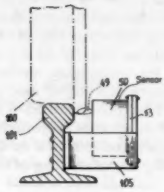
Colin M. Finch, Box 553, Lavington, New South Wales, Australia (2641)

Filed Dec. 12, 1978, Ser. No. 968,846
Claims priority, application Australia, Dec. 14, 1977, PD2772
Int. Cl.³ B61L 11/08
U.S. Cl. 246—128 **9 Claims**

1. A system controlling apparatus comprising:

an array of sensors each for detecting information concerning passing articles and for providing signals indicative of the information, each of said sensors being magnetic field proximity sensors, passing articles disturbing a magnetic field, each of said sensors having two transducers spaced less than the length of each of said articles to be detected and wherein each of said transducers includes means for creating said magnetic field, and sensing means disposed within said magnetic field and responsive to changes in said magnetic field such that when said magnetic field is disturbed by the proximity of each article, the sensing means operates to provide information as to that article;

field disturbing means for disturbing said magnetic field whereby to cause the sensing means to operate and provide a facility for simulating the disturbance of the field that would be caused by the proximity of each article; and



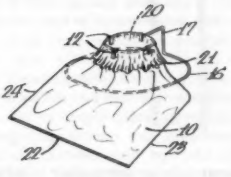
signal processing means for comparing the signals with predetermined parameter information as to the system and for providing predetermined control to the system in response to detecting equality between the signals and the predetermined parameter information and for providing an overriding control to the system in response to detecting inequality between the signals and the predetermined parameter information.

4,283,032

AUTOMOTIVE ENGINE LUB-OIL DRAINAGE AND DISPOSAL STRUCTURE

Kenneth R. Smith, Newhall, Calif., assignor to Kross, Inc., San Fernando, Calif.

Continuation of Ser. No. 665,944, Mar. 11, 1976, abandoned.
This application May 23, 1977, Ser. No. 799,474
Int. Cl.³ B65B 67/12
U.S. Cl. 248—97 **7 Claims**



1. A structure for use in economical draining and disposal of used automotive engine lubricating oil comprising:

a unitary used-oil bag stand formed of a length of manually bendable wire having a first outer portion defining a relatively large base for supporting the stand at rest upon a horizontal surface, a second portion defining an upright leg at one end of the wire portion defining the base, a third portion defining a horizontal arm extending inwardly of the upper end of the portion of the wire defining the leg, and a fourth, annular portion defining a throat element having a preselected small diameter of no greater than approximately 5" overlying the center of said base, said throat element being held by said leg and arm in an elevated horizontal position above the base a distance similar to the diameter of said throat element, said throat element having a transverse size substantially smaller than that of the base so as to be disposed substantially within the upright projection of the said base;

a used-oil receiving bag having an open end extending upwardly through and turned over said throat element; and

clamping means for removably securing said bag open end about the wire portion forming said throat element to provide an unobstructed entrance for free ingress of oil into the bag, said upright leg being of a length substantially less than the length of said bag so that a major por-

tion of the bag may rest upon the underlying surface upon which the stand is placed when said open end is so secured; as when positioned under an engine to receive oil draining therefrom, the bag being secured to the stand at said throat element only, the size of said bag being preselected to assure that the collected oil is supported substantially only by the underlying surface and stand base thereby to avoid placing stress on the wire stand sufficient to cause undesirable deformation thereof in oil-collecting use and whereby the open end of the bag is maintained fixed to said throat element in oil-receiving disposition spaced above the underlying surface while the bag is receiving the entire quantity of used oil from the automotive engine, said bag being formed of a strong, nonpermeable synthetic resin, such as polyethylene, adapted to have the open end gathered and tied to define a substantially leakproof, readily disposable bag of the collected used oil.

4,283,033

APPARATUS FOR SECURING CHAIR OR TABLE COLUMNS TO THE UNDERSIDE OF CHAIR SEATS, TABLE TOPS OR THE LIKE

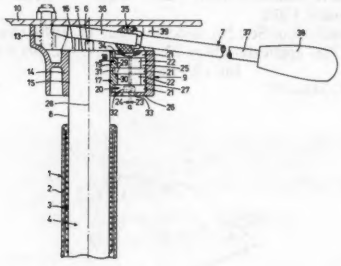
Fritz Bauer, Altdorf, Fed. Rep. of Germany, assignor to Suspa Federungstechnik, Fritz Bauer & Sohne oHG, Altdorf, Fed. Rep. of Germany

Filed Jul. 16, 1979, Ser. No. 57,754

Claims priority, application Fed. Rep. of Germany, Aug. 22, 1978, 2836666

Int. Cl.³ F16M *11/16*

U.S. Cl. 248—188 **6 Claims**



1. In an apparatus for securing chair or table columns or the like to the underside of chair seats, table tops or the like, said apparatus including a securing device capable of attachment to the underside of the chair seat or table top or the like and having a bore for receiving the upper end of said column, said securing device including a gripper shoe which is radially displaceable with respect to the column and can be pressed against the column, thereby immobilizing the column with respect to said securing device, the improvement wherein said securing device includes an eccentric body disposed on the side of said gripper shoe remote from said column, said eccentric body being pivotable about an axis and bearing on one side against said gripper shoe and on the other side against a wall of the securing device, and wherein said eccentric body is fixed at the top by means of a bearing assembly disposed between said eccentric body and said chair seat or table top and extending into a pivotable operating lever.

4,283,034

CURTAIN ROD BRACKET CONSTRUCTION

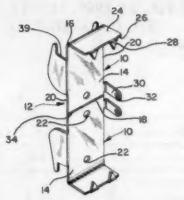
Maurice J. Sheehan, Ocean Bluff, Mass., assignor to Edward F. McBride, St. Petersberg, Fla., a part interest

Filed Sep. 10, 1979, Ser. No. 74,129

Int. Cl.³ A47M *1/10*

U.S. Cl. 248—263 **3 Claims**

1. A bracket construction for mounting curtain rods and the like comprising, an essentially flat base plate having opposed front and rear faces and top, bottom and side edges, said plate adapted for disposition with its rear face against the front face of a molding which forwardly projects as by the thickness thereof from the surface on which said molding is supported, said molding also having top and side edge surfaces, said plate including a pair of laterally spaced supporting arms forwardly projecting from the front face thereof, said plate having combination supporting and positioning means, said means including a supporting flange rearwardly extending at a generally normal attitude from said base plate top edge, said flange adapted to contact the top edge surface of said molding so as to support said bracket thereon, said means further including a positioning



tab rearwardly extending from one of said edges of said plate and adapted to contact said adjacent side edge surface of said molding so as to position said bracket adjacent the end of said molding, said flange further including at least one downwardly projecting tang adapted to penetrate said molding top edge surface so as to fix said bracket to said molding, said flange and said tab being connected to respective top and side edges of said plate along weakened lines whereby bending of said flange and said tab with respect to said plate will permit the removal of said flange and said tab from said plate, said plate further including a pair of spaced openings for attaching said plate to said moldings as by nails, screws and the like when said flange and tab have been removed from said bracket.

4,283,035

ARRANGEMENT FOR SUPPORTING A CURTAIN HOLDING ROD

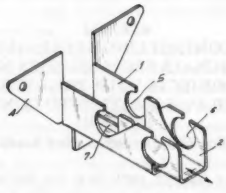
Luciano G. Ojembarrena, Rodriguez Marin, 69, and Francisco I. Robles, Cuevas de Almanzora, 46, both of Madrid, Spain

Filed Sep. 28, 1979, Ser. No. 80,018

Claims priority, application Spain, Apr. 23, 1979, 242.834[U]

Int. Cl.³ A47H *1/10*

U.S. Cl. 248—263 **14 Claims**



1. An arrangement for supporting a curtain holding rod or the like, comprising an elongated outer U-shaped element having two lateral portions and a bottom portion connecting said lateral portions with one another, said lateral portions each having at least one opening which is provided at identical locations in the direction of elongation and is open upwardly in a direction transverse to the direction of elongation; an elongated inner U-shaped element which is received in said outer element and has two further lateral portions and a further bottom portion connecting said further lateral portions with one another, said further lateral portions each having a further opening provided at identical locations in the direction of

elongation and also open upwardly in a direction transverse to the direction of elongation, each of said openings having a circular section and a straight section communicating with one another, the straight sections of said first-mentioned openings of said outer element extending in a first direction which is inclined to the direction of elongation, whereas the straight sections of said further openings of said further openings of said inner element extend in a second direction which is also inclined to the direction of elongation and at the same time is opposite to said first direction, said inner and outer elements being slidably movable in direction of elongation thereof between a first position in which said first-mentioned openings of said outer element are offset relative to said further openings of said inner element so that a curtain holding rod can be inserted from above into at least said first-mentioned openings of said outer element or said further openings, and a second position in which said first-mentioned openings of said outer element and said further openings of said inner element at least partially overlap one another and together form a substantially closed receptacle so that a curtain holding rod inserted in the thus-formed receptacle is retained therein and supported from below by both elements; and means on at least one of said elements for mounting the same on a support structure in a substantially horizontal position.

4,283,036

POSITION MEMORY FOR AUTOMATICALLY ADJUSTABLE SEAT ASSEMBLIES

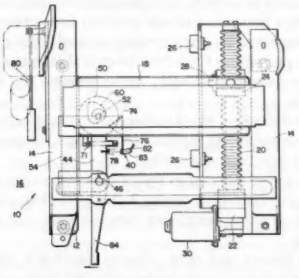
Hiroshi Tsuda, and Hideoki Matsuoka, both of Yokohama, Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Sep. 27, 1978, Ser. No. 946,166

Claims priority, application Japan, Oct. 12, 1977, 52-137101[U]

Int. Cl.³ B60M *1/02*

U.S. Cl. 248—429 **9 Claims**



1. Position memory for an adjustable seat assembly having at least one adjustable movable seat member, comprising:

drive means for driving the seat member for the adjusting movement thereof,

a rotary wheel member engageable with a stationary surface for rotation with the adjusting movement of the seat member while being freely rotatable relative to the stationary surface when disengaged and having a recess formed at the periphery thereof,

biasing means to engage said wheel member with the stationary surface,

first operating means for bringing said wheel member out of engagement with said stationary surface for free rotation relative to the seat member, said first operating means including a pivotal member carried by said seat member and pivotally movable to allow free rotation of the wheel and a manually operable lever operatively connected with said pivotal member for pivotal movement thereof,

second operating means for providing said wheel member with an angular rest position under a condition wherein said wheel member is disengaged from said stationary member, said second operating means including a cam member integrally mounted on said rotary wheel member and having a cam surface, and a cam mating surface which is engageable with said cam surface to bring said wheel member into said angular rest position, and

switch means having a contact element in constant engagement with the periphery of said wheel member and engageable in said recess in the rest position of the wheel member to open said switch means.

4,283,037

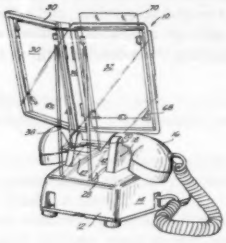
TELEPHONE DISPLAY DEVICE

Stanley Bindman, North Bellmore, N.Y., assignor to Business Concepts Marketing Corporation, Island Park, N.Y.

Filed Oct. 2, 1978, Ser. No. 947,614

Int. Cl.³ H04M *1/21*

U.S. Cl. 248—441 B **3 Claims**



1. A display stand for use with a telephone set of the type having a cradle with a top surface for supporting a telephone receiver and bottom surface defining the top of a hand grip opening extending toward the front of the telephone from the rear, said cradle bottom surface including a downwardly extending lip at the top rear of said opening, said stand comprising: a pair of spaced legs, an easel supported to the upper portions of said legs, a supporting member extending forwardly from the lower portion of said legs, said member being proportioned to fit within said hand grip opening and including surfaces thereon for lockingly engaging surfaces of said telephone set defining said opening; said supporting member extending transversely between said legs and including a top edge, and at least one locking lug secured to said supporting member top edge and biased to extend upwardly beyond said top edge to engage said telephone opening lip when said support member is positioned within said telephone opening, said locking lug having a top camming surface adapted to engage said downwardly extending lip.

4,283,038

MIRROR MOUNTING DEVICE

Thomas D. Kurtz, 1101 First Ave., Rock Falls, Ill. 61071

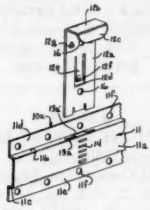
Filed Sep. 19, 1979, Ser. No. 76,958

Int. Cl.³ A47G *1/24*

U.S. Cl. 248—478 **7 Claims**

1. A mirror mounting device comprising, at least one mirror mounting bracket having a mounting plate portion and a mirror hook at one end of the mounting plate portion, an elongated longitudinally channeled mounting strip having a lengthwise extending intermediate wall portion and first and second flange portions along the lengthwise edges of the intermediate wall portion extending laterally from one side of the intermediate wall portion and first and second outturned lip portions on the respective first and second flange portions disposed in a plane parallel to and offset from the intermediate wall portion a distance no less than the thickness of the mounting plate portion of the mirror mounting bracket, the first and second flange portions of the strip having slots therein at correspond-

ing locations therealong to provide at least one pair of slots that register in a direction crosswise of the strip, the mounting plate portion of the mirror mounting bracket extending through the registering pair of slots in the first and second



flange portions and between the intermediate wall portion and the first and second lip portions, and means including fastener receiving openings at spaced locations along the mounting strip for attaching the mounting strip to a wall.

4,283,039

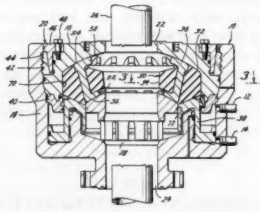
ANNULAR BLOWOUT PREVENTER WITH UPPER AND LOWER SPHERICAL SEALING SURFACES

Gary R. Schaeper, and Richard A. Olson, both of Houston, Tex., assignors to NL Industries, Inc., New York, N.Y.

Filed Jun. 5, 1980, Ser. No. 156,833

Int. Cl.[3] **E21B** *33/06*

U.S. Cl. 251—1 B **4 Claims**



1. In a blowout preventer adapted for use on an oil or gas well rig having a lower housing, an upper housing, a resilient sealin means positioned between the housings, and piston means for actuating said sealing means, the improvement comprising,

the inner surface of the upper housing having a spherical surface,

the inner surface of the lower housing having a spherical surface, said spherical surfaces of the upper housing and the lower housing are concentric, and

said resilient sealing means including upper and lower spherical surfaces for coacting with the spherical surfaces on the upper housing and lower housing, respectively, responsive to engagement of said sealing means by said piston means upon said actuation.

4,283,040

PRESSURE OPERATED PILOT CONTROL SHUT-OFF VALVE

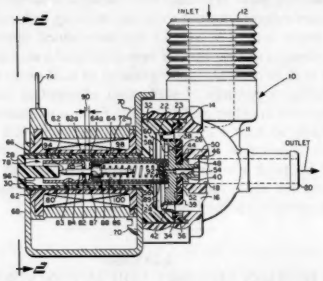
Lawrence A. Kolze, Bensenville, Ill., assignor to Eaton Corporation, Cleveland, Ohio

Continuation of Ser. No. 796,779, May 13, 1977, Pat. No. 4,174,824. This application Oct. 5, 1979, Ser. No. 82,204

The portion of the term of this patent subsequent to Nov. 20, 1996, has been disclaimed.

Int. Cl.[3] **F16K** *31/40*

U.S. Cl. 251—30 **8 Claims**



1. A valve assembly of the type operable to permit and interrupt fluid flow through the main passage thereof, said assembly comprising:

(a) housing means defining a fluid passage having an inlet and an outlet and including means defining a main valve seating surface intermediate said inlet and outlet, said housing means including guide means defining a guide hollow having the walls thereof formed of nonmagnetic material;

(b) a main valve member movable with respect to the housing means between a closed position contacting said seating surface and an open position spaced from said seating surface permitting fluid flow from said inlet to said outlet;

(c) means biasing said main valve member to the closed position;

(d) means defining a bleed passage across said valve member and means defining a pilot flow passage for communicating said inlet and said outlet;

(e) a pilot valve member movable between a closed position preventing fluid flow through said pilot flow passage and an open position permitting flow through said pilot flow passage;

(f) means biasing said pilot valve to the closed position;

(g) magnetomotive force means operable upon actuation to effect said operation of said valve assembly to move said pilot valve member from said closed to said open position, and including,

(i) floating pole piece means formed of ferromagnetic material and movably received in said guide hollow,

(ii) armature means formed of ferromagnetic material received in said guide hollow and movable with respect to said pole piece means between a first position spaced a predetermined distance from said pole piece means in which first position said pilot valve is closed and a second position less than said predetermined distance from said pole piece means in which said second position said pilot valve is open,

(iii) stop means cooperating with said pole piece and said armature means and movable therewith, said stop means being operable to limit the movement of said main valve member relative to said pole piece means whereupon actuation of said magnetomotive force means, said armature means is moved from said first position to said second position permitting flow through

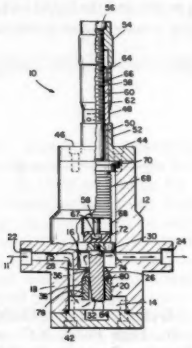
said pilot passage thereby causing a pressure differential across said valve member, whereupon said main valve is opened by the forces of differential pressure acting thereacross, wherein as said main valve moves from said closed to said open position, said main valve contacts, said stop means and thereafter said pole piece means and said armature means move as a unit therewith.

4,283,041

METERING VALVE

Edmund Kujawski, 8 Coleridge Pl., Greenlawn, N.Y. 11740

Filed Mar. 10, 1980, Ser. No. 129,087
Int. Cl.³ F16K *47/04*
U.S. Cl. 251—205 **4 Claims**



1. A metering valve for regulating a gas flow rate comprising:

(a) a valve body having first and second inner cylindrical chambers;

(b) inlet and outlet ports in said valve body in communication with said first and second inner cylindrical chambers respectively;

(c) a transverse wall portion between said first and second inner chambers, said wall portion having a passageway extending therethrough to provide communication between the first and second inner chambers, said passageway having a first section being partially threaded and a second tapered section adjacent said first section;

(d) a valve seat disposed in said passageway having a cylindrical orifice extending therethrough, and an external configuration conforming to said tapered section;

(e) a valve stem having a groove thereon to cooperate with said valve seat, said groove being tapered and extending longitudinally on said shaft, said groove increasing in depth at a pre-selected rate per unit-length with the maximum depth being at a base end of said shaft, whereby axial movement of said stem regulates the gas flow rate through a preset range between said first and second chambers;

(f) torque reduction means comprising a cylindrical valve stem having a diameter from 0.093–0.1252 inches for decreasing the torque required to move the valve stem, whereby precise settings of the gas glow can be achieved;

(g) a bellows disposed in said second chamber concentric with said valve stem, a plug portion disposed on one end of said bellows to abut said transverse wall portions and close said passageway when said bellows is in the extended position;

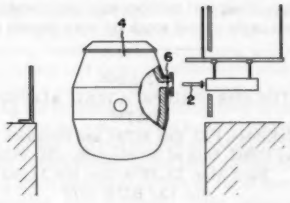
(h) micrometer means extending outside of said valve body for moving said valve stem in the axial direction.

4,283,042

METHOD FOR REPAIRING THE TAP HOLE OF A CONVERTER

Sueki Kubo, Kitakyushu, Japan, assignor to Kurosaki Refractories Co., Ltd., Fukuoka, Japan

Division of Ser. No. 22,254, Mar. 20, 1979. This application Feb. 22, 1980, Ser. No. 123,614
Claims priority, application Japan, Feb. 3, 1979, 54-11700
Int. Cl.³ F27D *1/16*
U.S. Cl. 266—45 **10 Claims**



1. A method of repairing the tap hole of a converter under high temperature utilizing a refractory material injection pipe comprising:

(1) inserting said injection pipe into said tap hole, said injection pipe having at least one refractory material injection opening at the distal end thereof,

(2) discharging said refractory material within said injection pipe through said injection opening and applying said discharged refractory material onto the inner surface of said tap hole, and

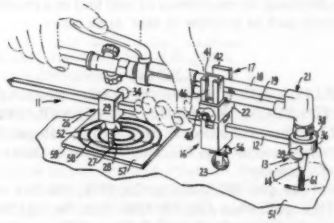
(3) cooling substantially the entire length of said injection pipe when said refractory material is applied onto the inner surface of said tap hole.

4,283,043

CUTTING TORCH ATTACHMENT

Alan Kalian, 106 Harvard St., San Francisco, Calif. 94134

Filed Oct. 12, 1979, Ser. No. 84,405
Int. Cl.³ B23K *7/10*
U.S. Cl. 266—66 **19 Claims**



1. An attachment for supporting the tip of a cutting torch in desired relation to the work piece during a variety of cutting operations, comprising:

an elongated bar of uniform cross-section,

holding means secured at one end of said bar and adapted for clamping engagement onto a variety of burning torch tips of different sizes and shapes,

a support member mounted on said bar for adjustable positioning therealong and having an upwardly extending portion adapted for receiving the parallel gas supply tubes of a cutting torch having its burning tip clamped in said means,

a positioning member vertically adjustable on said upwardly

extending portion and formed to bear against and support the lower tube of the cutting torch,

a rotatable wheel having an upwardly extending post engaged with the lower end of said support member and formed for selective spacing of said wheel from said bar and for selective rotative positioning of the plane of said wheel about the axis of said post, and

a centering point device having a downwardly directed point on a vertically extending shank carried by a keeper formed for adjustable positioning along said bar, whereby vertical movement of said shank in said keeper and said post in said support member adjustably positions the spacing and angle of said torch tip with respect to said bar.

4,283,044

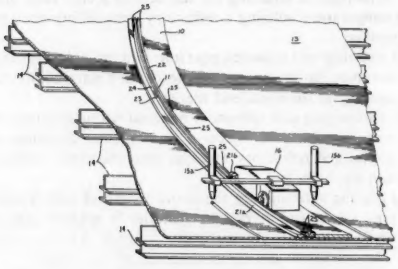
APPARATUS FOR GUIDING A TOOL ALONG A CURVED PATH

John R. McKibbin, P.O. Box 35209, and Frederick B. Tyler, Jr., P.O. Box 58002, both of Birmingham, Ala. 35209

Filed Mar. 23, 1979, Ser. No. 23,292

Int. Cl.³ B23K *7/10*

U.S. Cl. 266—67 **13 Claims**



1. An apparatus for guiding a tool along a predetermined curved path in relation to a work piece, including:

(a) A spline member elastically deformed in the shape of a curve to provide a curved guide member;

(b) A first means for holding said spline member in the shape of a curve, and

(c) A second means responsive to said curved guide member for directing the movement of said tool in a predetermined curved path in relation to said work piece.

4,283,045

APPARATUS FOR THE CONTINUOUS RECOVERY OF TIN FROM IRON RICH CONCENTRATES

Gerhard Melcher, and Horst Weigel, both of Cologne, Fed. Rep. of Germany, assignors to Klöckner-Humboldt-Deutz AG, Fed. Rep. of Germany

Division of Ser. No. 952,963, Oct. 20, 1978, Pat. No. 4,236,916. This application Jan. 28, 1980, Ser. No. 115,752

Claims priority, application Fed. Rep. of Germany, Oct. 24, 1977, 2747586

Int. Cl.³ C22B *9/00*

U.S. Cl. 266—162 **6 Claims**

1. An apparatus for the recovery of tin from an iron rich tin concentrate which comprises:

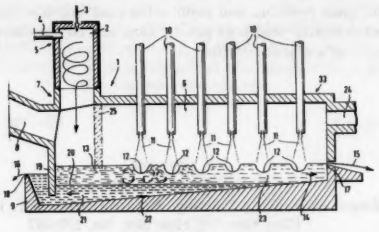
a reaction chamber,

smelting means for smelting said concentrate in suspension as it enters said reaction chamber,

first overflow means at one end of said chamber for removing slag therefrom,

a second overflow means at the other end of said chamber at a lower elevation than said first overflow means for recovering molten metal,

a plurality of blower lances spaced along said reaction chamber for projecting reaction gas at the liquid surface formed therein, and



discharge means in said reaction chamber located between said smelting means and the liquid surface in said chamber for discharging exhaust gases generated in said smelting means.

4,283,046

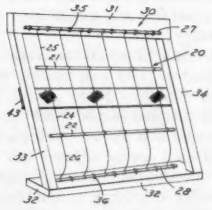
SEAT CONSTRUCTION

Louis G. Bowles, Jr., High Point, N.C., assignor to Gulf & Western Manufacturing Company, Southfield, Mich.

Filed Aug. 24, 1979, Ser. No. 69,581

Int. Cl.³ A47C *7/02*

U.S. Cl. 267—102 **21 Claims**



1. In a seat construction, a spring assembly comprising

a pair of longitudinally extending wires,

a plurality of transversely extending spaced spring wires,

portions of said transversely extending spaced spring wires being wound around said longitudinally extending wires to define an intermediate portion extending between the spaced longitudinally extending wires and free ends extending beyond the longitudinally extending wires at an acute angle to the intermediate portion,

an additional longitudinally extending wire connecting the free ends of said transversely extending spring wires along each said first-mentioned longitudinally extending wires,

the portions of said transversely extending spaced spring wires between one said additional longitudinally extending wires and the adjacent longitudinally extending wire being curved so that said one additional longitudinally extending wire is displaced out of the general plane of the remainder of said longitudinally extending wires.

4,283,047

FACING PLY SEPARATOR

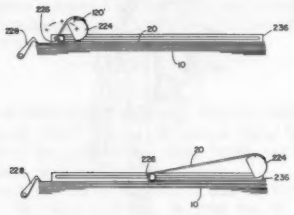
Hubert Blessing, Dallas, Tex., assignor to Levi Strauss & Co., Del.

Continuation of Ser. No. 807,348, Jun. 17, 1977, Pat. No. 4,143,871, which is a continuation-in-part of Ser. No. 701,857, Jul. 1, 1976, abandoned. This application Sep. 8, 1978, Ser. No. 940,610

The portion of the term of this patent subsequent to Mar. 13, 1996, has been disclaimed.

Int. Cl.³ B65H *3/22*

U.S. Cl. 271—10 **3 Claims**



1. Apparatus for sequentially separating layers of stuck together fabric workpieces from a single feed stack, the apparatus comprising a movable separating bar positioned above the topmost layer, means for selectively engaging the topmost layer near one edge thereof, means for moving the engaging means while they are engaged with the topmost layer, over the separating bar and for thereafter moving the engaging means across the topmost workpiece, and means for moving the separating bar behind the moving engaging means to produce a bend in the topmost workpiece, which bend moves across the topmost workpiece during its separation from the stack, whereby the topmost layer travels around a narrower radius, and hence over a shorter path, than the next underlying layer stuck to the topmost layer so that a differential separating force acting between the two layers and tangential to their adjoining surfaces is thereby produced.

4,283,048

DEVICE FOR SEPARATING OUT FOLDED SPOILED COPIES IN WEB-FED ROTARY PRINTING MACHINES

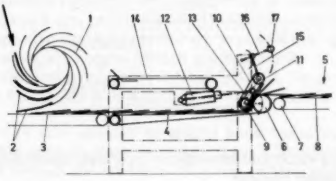
Hans Müller, Leimen, Fed. Rep. of Germany, assignor to Heidelberger Druckmaschinen AG, Heidelberg, Fed. Rep. of Germany

Filed Nov. 5, 1979, Ser. No. 90,983

Claims priority, application Fed. Rep. of Germany, Nov. 6, 1978, 2848010

Int. Cl.³ B65H *29/62*

U.S. Cl. 271—302 **3 Claims**



1. Device for separating out folded waste or spoiled copies in web-fed rotary printing machines at a delivery of a folding apparatus having a main conveyor belt whereon a stream of folded copies are transported in overlapping, fish scale-like arrangement comprising a roller pair adjacent the main conveyor belt for deflecting the stream of copies in a fanned-out manner, said deflecting roller pair including one deflecting roller rotatably supporting the main conveyor belt and, as viewed in transport direction of the stream of copies, another deflecting roller located upstream of said one deflecting roller and disposed in substantially horizontal alignment therewith, said other deflecting roller being engageable with the main conveyor belt so as to deflect it and the stream of copies in downward direction and thereby effect the fanning-out of the copies between said rollers of said deflecting roller pair, a short additional conveyor belt drivingly engaged by said other deflecting roller and swingable about said other deflecting roller into a normal operating position thereof for transporting properly printed copies to a delivery system and also swingable about said other deflecting roller into another operating position thereof for transporting spoiled copies to a distribution belt, a tensioning roller rotatably supporting said short additional conveyor belt and swingable therewith about said other deflecting roller, a linkage system comprising a rocking lever and a coupling bar coupling said rocking lever to said tensioning roller, a separating roller carried by said rocking lever at a free end thereof and being swingable in among the fanned-out copies by said linkage system as said short additional conveyor belt is swung about said other deflecting roller into said other operating position, said separating roller being engageable with the fanned-out copies for feeding the following spoiled copies in overlapping fish scale-like manner over said short additional conveyor belt to the distribution belt.

4,283,049

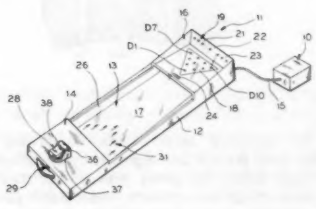
BOWLING BALL GAME

Richard A. Karlin, Chicago; Gordon A. Barlow, Evanston, and John R. Krutsch, Glenview, all of Ill., assignors to Gordon Barlow Design, Ill.

Filed Feb. 7, 1979, Ser. No. 9,762

Int. Cl.³ A63D *3/00*

U.S. Cl. 273—38 **9 Claims**



1. A miniaturized bowling ball game,
said game comprising:
a miniaturized bowling lane assembly;
pin status means for simulating bowling pins and indicating pin status located at one end of said lane assembly;
ball means;
mechanical ball propelling means at the other end of said lane assembly for aiming and propelling said ball means the length of said lane assembly;
said ball propelling means including means for aiming said ball means at said simulated bowling pins;
zone switch means operated by said propelled ball means for determining the location of said ball means when the ball means enters the portion of the lane assembly at the said one end of said lane assembly where the pins would be;
said zone switch means comprising a plurality of downwardly extending fingers traversing said lane assembly at said one end;
each of said fingers comprising the armature of a switch momentarily closed as said ball means strikes said armature;
each of said fingers moving to an open circuit position after said ball means discontinues actuating contact with same; and

said ball means and said fingers further being of relative sizes such that more than one of said switches can be closed by said ball means as said ball means passes said zone switch means;

processing means for determining which pins will be knocked down per propelled ball means responsive to said determined location and a random input for each of the pins standing when said ball means is propelled;

means in said processing means for accomodating variations in closure overlap among a plurality of said fingers struck by said ball means as it momentarily closes said fingers in a substantially simultaneous manner to assure accurate input to said processing means;

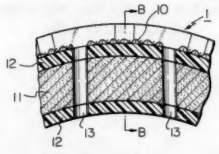
switch closure determining means in said processing means for determining the closure of said switches to thereby determine the location of said ball means; and

means including said processing means for operating said pin status means to show which pins have been knocked down.

4,283,050
RACKET FRAME

Itsushi Nagamoto, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Japan

Continuation of Ser. No. 856,091, Nov. 30, 1977, abandoned. This application May 29, 1979, Ser. No. 43,159
Claims priority, application Japan, Dec. 10, 1976, 51-147662; Dec. 30, 1976, 51-160195; Dec. 30, 1976, 51-160196; Dec. 30, 1976, 51-160197
Int. Cl.³ A63B *49/02*
U.S. Cl. 273—73 K **14 Claims**



1. An improved racket frame comprising a generally rounded head portion accompanied by an elongated thin metallic plate formed integrally with a fiber reinforced plastic outer layer of said head portion, said metallic plate including a center extension in the form of first metallic strip means, and elongated branches each also in the form of a respective second metallic strip and extending laterally from and on both sides of said center extension, said center extension being positioned so that its width dimension is substantially normal to the playing faces of said racket and so that it is on the outer side of the curvature of the generally rounded head portion.

4,283,051
POLICE NIGHT STICK

Sergio J. Perez, 311 W. 97th St., Apt. 3-E, New York, N.Y. 10025

Filed Feb. 11, 1980, Ser. No. 120,485
Int. Cl.³ F41B *15/06*
U.S. Cl. 273—84 R **1 Claim**

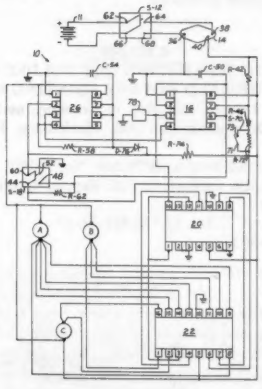
1. An improved policeman's night stick, comprising in combination; an elongated, cylindrical, rigid, straight club portion; a rigid, hard plastic handle mounted on a first surface portion of said club portion and being upwardly directed therefrom; said handle being located approximately midway between the ends of said club portion; a metallic, tubular sheath; means mounting said sheath to a second outer surface portion of said club portion at the forward end thereof; said second surface portion being opposite to said first surface portion; a steel needle being slidably received in said sheath; the operative end of said needle being tapered to a point and being in a normally retracted position within said sheath when not in use; the opposite end of said needle being located adjacent to said handle and having finger engaging means which the policeman engages to slide said needle within said sheath and expose said

operative end beyond the forward end of said club portion; a spring clip mounted on the outer surface of said club portion for attachment to the policeman's belt; and a whistle and thong tethered to said club portion.

4,283,052
ELECTRONIC AMUSEMENT APPARATUS AND CIRCUIT

Anthony J. Windisch, 3882 Walsh St., St. Louis, Mo. 63166

Filed Oct. 26, 1979, Ser. No. 88,290
Int. Cl.³ A63F *9/00, 5/00*
U.S. Cl. 273—85 G **2 Claims**



1. An electronic amusement apparatus, comprising:

a playing surface;

a plurality of binary indicators displayed on the playing surface;

means for electronically pulsing the indicators, said means being connected to drive a sequence of pulses for actuating the indicators, said sequence including a preselected number of pulses, said number of pulses varying among said indicators, one of said pulses ultimately causing one of said indicators to remain actuated, the binary indicators

are light-emitting diodes, the diodes are displayed in a preselected pattern;

switch means movable between first and second positions, said switch means connected for driving said pulses at a first constant rate when said switch means is in said first position and connected for driving said pulses at a second constant rate, slower than said first rate, when said switch means is in said second position, whereby said one diode ultimately remains illuminated, said playing surface comprises two one-half areas, each of said areas including a plurality of said diodes;

an oscillator timer, and means connected to the oscillator timer for emitting sound in response to each pulse; and

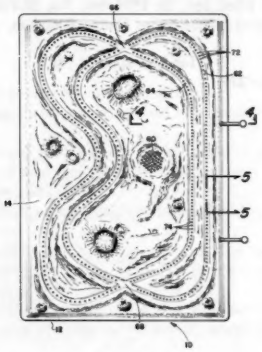
said sequence comprises each diode in one of said one-half areas is pulsed and then each diode in the other of said one-half areas is pulsed alternatively.

4,283,053

AIR POWERED ROCKET SLED GAME

Herman Parker, 404 W. Taylor, McAlester, Okla. 74501; Leon Walker, P.O. Box 415, Welch, Okla. 74369, and Howard S. Berry, Rte. 1, Blue Jacket, Okla. 74333

Continuation-in-part of Ser. No. 871,172, Jan. 23, 1978, Pat. No. 4,209,935. This application Apr. 24, 1980, Ser. No. 143,356
Claims priority, application Mexico, May 13, 1977, 169159
Int. Cl.³ A63F *9/14*
U.S. Cl. 273—86 D **8 Claims**



1. An apparatus for a rocket sled game comprising

a body member;

a pair of elongated substantially enclosed passageways within the body member, the ends of each said passageway being disposed adjacent each other to form a pair of substantial loops of approximately the same length;

a pair of elongated grooved tracks, one provided along the upper outside surface of each passageway to form a pair of continuous loops, each track being in communication with its respective passageway through a plurality of spaced bores along the bottom of each grooved track;

a projectile sled adapted for slidably fitting in the grooved tracks for traveling in a single direction along each said track;

the bores of said plurality of spaced bores being inclined from the vertical, the upper ends of each bore being directed toward the direction of travel of said projectile sled;

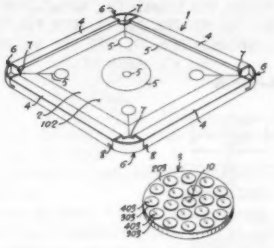
means for selectively introducing a separate flow of air into one end of each passageway in a direction opposite the direction of travel of the projectile sled to thereby selectively force the projectile sled along each grooved track in the direction associated with the inclined bores and opposite the direction of flow of air through each passageway, wherein the means for selectively introducing a flow of air comprises a blower compartment, a centrifugal blower mounted in the compartment, the intake thereof being in communication with the air outside the body member; a pair of oppositely disposed air ducts tangentially extending from the blower compartment, one said air duct being in communication with one end of a first passageway and having a first valve member interposed in said air duct between the blower and the first passageway, the second said air duct being in communication with one end of the second passageway and having a second valve member interposed in said air duct between the blower and said second passageway, each said valve member having a valve operator extending exterior of the body member.

4,283,054

DISK GAME APPARATUS

Gianfranco Patella, 4A/8, Via di Serretto, and Luciano Patella, 18/6, Corso Italia, both of Genoa, Italy

Filed Sep. 19, 1979, Ser. No. 76,933
Claims priority, application Italy, Sep. 19, 1978, 15254 B/78
Int. Cl.³ A63F *3/00*
U.S. Cl. 273—126 R **3 Claims**



1. In a game played on a substantially flat playing surface, at least one disk capable of sliding on said surface, said disk having on the side contacting said playing surface a plurality of small circular projections each terminating with a concave imprint having a circular edge directed towards the playing surface, one of said concave imprints being located at the approximate center of said disk and having a point means projecting beyond the plane defined by the circular edge of said one concave imprint to contact said playing surface.

4,283,055

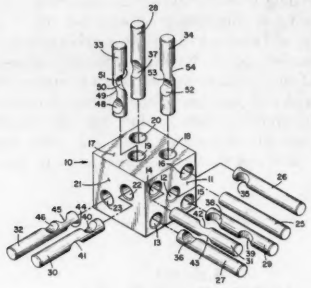
PUZZLE TYPE TOY

Donald R. Larsen, 358 E. 800 North, American Fork, Utah 84003

Filed Oct. 4, 1979, Ser. No. 81,882
Int. Cl.³ A63F *9/12*
U.S. Cl. 273—160 **5 Claims**

1. A puzzle type toy comprising a hexahedral, solid body having a plurality of bores of uniform depth extending inwardly only partially through said body from three sides thereof so that each bore extending inwardly from a side of said body partially intersects at least one bore extending inwardly from the other two sides thereof, and a plurality of rods, one rod having either substantially continuous longitudinal side walls or one or more notches therein and the other rods having at least one notch in the sidewalls thereof at various positions around and along the length of said other rods, whereby the rods are all received in the bores only when the rods are inserted in their respective bores in a particular order

with said one rod being the last rod to be inserted into its respective bore, otherwise an interference will occur between



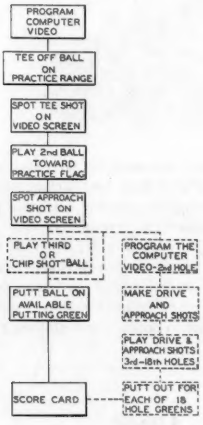
said rods as they are inserted into the bores at the partial intersections of the bores in said solid body.

4,283,056

PROCESS FOR SIMULATING GAME OF GOLF

Franklin C. Miller, 909 Volante Dr., Arcadia, Calif. 91006

Division of Ser. No. 927,291, Jul. 24, 1978, Pat. No. 4,192,510.
This application Dec. 27, 1979, Ser. No. 106,889
Int. Cl.[3] A63B *69/36*
U.S. Cl. 273—176 A **3 Claims**


PROGRAM COMPUTER VIDEO
TEE OFF BALL ON PRACTICE RANGE
SPOT TEE SHOT ON VIDEO SCREEN
PLAY 2nd BALL TOWARD PRACTICE FLAG
SPOT APPROACH SHOT ON VIDEO SCREEN
PLAY THIRD OR "CHIP SHOT" BALL
PROGRAM THE COMPUTER VIDEO-2nd HOLE
PUTT BALL ON AVAILABLE PUTTING GREEN
MAKE DRIVE AND APPROACH SHOTS
PLAY DRIVE & APPROACH SHOTS 3rd-18th HOLES
SCORE CARD
PUTT OUT FOR EACH OF 18 HOLE GREENS

1. A game process employing a conventional golf practice range with driving range, approach greens, practice putting greens, a computer having a read-out screen programmable with a golf course hole layout and player accessible controls for indicating the playing ball position on said hole layout on said screen, the steps including programming said computer to image successively the hole layout for each hole of a given golf course, driving a ball on the driving range, positioning an image ball on said screen image hole layout in accordance with the position on the driving range of the driven ball, stroking successive balls on said driving range, positioning said image ball on said screen layout in accordance with the accumulated distance from stroking of the first and successive balls, stroking another ball on said putting practice green after said image ball indicates location on said imaged green until said ball is downed in said green cup, and repeating the steps of the process for each screened hole layout with which the computer is programmed.

4,283,057

WHISTLING GOLF CLUB

James T. Ragan, 473 Thayer Pond Rd., Wilton, Conn. 06897

Continuation-in-part of Ser. No. 80,061, Sep. 28, 1979, abandoned. This application Sep. 5, 1980, Ser. No. 184,392
Int. Cl.[3] A63B *69/36*
U.S. Cl. 273—186 A **7 Claims**

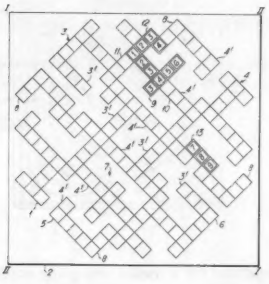
1. A golf club comprising a shaft, a head mounted by said shaft and formed with an air flow hole having inlet and outlet ends, a whistle in said hole and actuated by air flow through the hole, means actuated by swinging of said club for forcing air into said inlet end, said outlet end being open to the ambient air and said swinging forming localized air turbulence in the ambient air at said outlet end, and a tailpipe extending from said outlet end to a position where the ambient air is relatively free from said turbulence.

4,283,058

SEQUENCE ARRANGING BOARD GAME

Marie de Cadier, Pirbright, England, assignor to Eugene A. A. E. de Cadier, Pirbright, England, a part interest

Filed Apr. 10, 1979, Ser. No. 28,870
Claims priority, application United Kingdom, Apr. 12, 1978, 14317/78
Int. Cl.[3] A63F *3/00*
U.S. Cl. 273—236 **9 Claims**



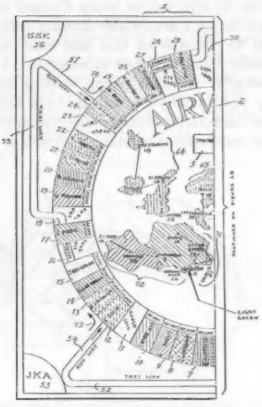
8. Apparatus for playing a board game, said apparatus comprising:

(a) a board having a generally square playing surface, said playing surface having a first array of parallel rows of playing positions, each row of said first array being parallel to one diagonal of said surface, a second array of said parallel rows of playing positins extending transversely to said first array, each row of said second array being parallel to a diagonal of said surface transverse to said one diagonal, said arrays crossing over each other to define a plurality of common playing positions, and a plurality of barriers dividing at least some of said rows into sections of playing positions, wherein the number of said sections having two playing positions is equal to or greater than the number of any other sections which have the same number of playing positions as each other, said same number being at least three; and

(b) at least two distinguishable sets of playing pieces, each of said playing pieces having indicia thereon, each of said sets comprising at least two groups of playing pieces, said playing pieces in each group having indicia which form part of a predetermined sequence, the pieces of each of said sets having at least a majority of the indicia of said

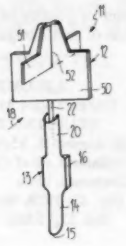
predetermined sequence thereon, the indicia on the playing pieces of each set being the same.

4,283,059
BOARD GAME APPARATUS
Wayne A. Beeder, Overhill Rd., Stormville, N.Y. 12582
Filed Jul. 5, 1977, Ser. No. 812,523
Int. Cl.[2] A63F *3/00*
U.S. Cl. 273—254 **18 Claims**



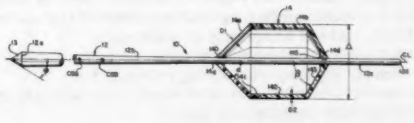
1. A board game apparatus comprising:
a game board with a playing field imprinting upon one side thereof;
a geographical map including a plurality of territories imprinted on said playing field, each territory identified by distinctive indicia;
at least one city designation imprinted within each of said territories;
a course imprinted on said playing field defining a circuit about said map, said course being divided into a plurality of playing spaces;
first identification means imprinted on some of said playing spaces corresponding to the indicia on one of said territories;
second identification means imprinted on some of said playing spaces corresponding to the indicia on one of said city designations;
a plurality of starting bases imprinted on said playing field each having distinctive indicia thereon;
one or more pathways extending between each of said starting bases and said course;
a plurality of first playing pieces being initially positioned on said starting bases and for moving along said pathways and about said course, each of said first playing pieces including indicia for associating each playing piece with one of said starting bases;
dice for controlling the movement of said playing pieces about said course;
a plurality of second playing pieces for being placed on said city designations on said map, said second playing pieces including indicia corresponding to the indicia on one of said starting bases; and
a spinner for determining penalties in the game, said spinner including a spinner board divided into a plurality of different sections and an arrow for pointing to any one of said coded sections to determine from which territory of said map a player removes an opponents second player piece when under a penalty situation, said sections including indicia corresponding to said first identification means so that each section is associated with one or more territories.

4,283,060
TARGET HAVING LIMITED ROTATIONAL MOVEMENT UPON IMPACT
H. Georg Braunschweiler, Dahlienweg 1, 5223 Riniken, Switzerland
Filed Sep. 4, 1979, Ser. No. 71,944
Claims priority, application Switzerland, Sep. 13, 1978, 9573/78
Int. Cl.[3] F41J *5/00, 7/00*
U.S. Cl. 273—383 **10 Claims**



1. A combat target comprising:
means defining a target image;
a force storage means including a power-take off shaft;
said power-take off shaft being essentially erect when the target image is erect;
said target image being coupled for common rotation with said power-take off shaft;
the storage capacity of the force storage means being adapted for performing a number of revolutions of the power take-off shaft;
a stop arrangement against which said take-off shaft is resiliently biased;
said stop arrangement in the presence of a hit at the target image being temporarily placed into an ineffectual position for allowing the target image to perform a limited rotational movement;
said stop arrangement includes at least one first stop which is rigidly connected for rotation with the power take-off shaft;
said stop arrangement further including a stationarily arranged second stop coacting with said first-mentioned stop;
both of said stops being structured so that they can be travelled thereover;
said stop arrangement further includes a stop carrier seated upon the power take-off shaft; and
said stop carrier having bores arranged at substantially uniform angular spacing from one another; and
said bores being structured for receiving at least one stop plug forming said first stop.

4,283,061
BLOW GUN DART
Rolf W. Jordan, ISAR Strasse 93, 2800 Bremen, Fed. Rep. of Germany
Filed May 7, 1980, Ser. No. 147,388
Int. Cl.[3] F41B *1/02*
U.S. Cl. 273—423 **12 Claims**



1. A blow gun dart comprising:

an elongated shaft tapering from tip to tail wherein the forward portion of the shaft has a diameter larger than the rearward portion of the shaft;

a hollow impeller secured to the rearward portion of said elongated shaft;

said hollow impeller including a conical forward section having a first predetermined included angle with respect to the center line of the shaft and a rearward section containing a conical portion having a second predetermined angle with respect to the center line of the shaft; and

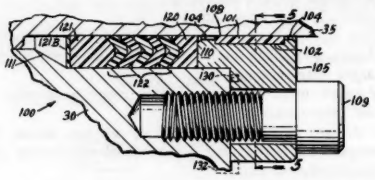
wherein the center of gravity of said dart is located in the forward portion of said elongated shaft.

4,283,062

HYDRAULIC INJECTION MOLDING MACHINE STUFFING BOX

James R. Catanzaro; August R. Meyer, both of Cincinnati, and David L. Willis, Hillsboro, all of Ohio, assignors to Cincinnati Milacron Inc., Cincinnati, Ohio

Filed Dec. 26, 1979, Ser. No. 106,968
Int. Cl.³ F16J *15/18*
U.S. Cl. 277—12 **23 Claims**



1. In a ram support packing retainer assembly for use in the stuffing box disposed at the sliding joint between the piston and the cylinder of a hydraulic ram in a hydraulic press such as a hydraulic injection molding machine for molding articles from resin and wherein said stuffing box has packing disposed within an annular outer recess at the end of the cylinder in engagement with the piston and of the kind which expands radially inward against the piston in response to axial compression by a gland or packing retainer ring, the improvement comprising:

concentricity pilot means to be connected between said gland and said stuffing box;

a support bushing groove on the inside diameter of said gland;

a support bushing supported in said groove and having an inside diameter less than the inside diameter of said gland.

4,283,063

SELF ALIGNING INSTALLATION RESISTANT LUBRICANT SEAL

David B. Prescott, Littleton, Colo., assignor to The Mechanex Corporation, Englewood, Colo.

Continuation of Ser. No. 41,178, May 21, 1979, abandoned. This application Jun. 26, 1980, Ser. No. 163,181
Int. Cl.³ F16J *15/34*
U.S. Cl. 277—37 **1 Claim**

1. In a vehicle wheel lubricant seal for sealing between a bore in a wheel hub and an axle insertable into said bore, said bore being rotatable with respect to said axle, said bore having a seal limit means for limiting axial movement of said seal into said bore, said seal comprising, in combination:

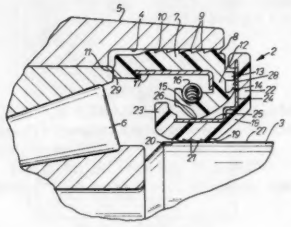
a first substantially annular member for sealingly and frictionally engaging and rotating with said bore;

a second substantially annular member for sealingly and frictionally engaging said axle;

spacer means on said first member for contacting said second member for maintaining said first member and said second member in a desired axial spaced relationship with respect to each other during installation of said seal onto said axle;

seal means on said first member for sealingly engaging a wear surface on said second member for effecting a seal between said first member and second member under static and dynamic conditions;

a first plurality of radially outwardly extending resilient seal ridges molded integral with and radially outwardly extending from said first member for sealingly and frictionally engaging said bore in said wheel hub, each of said plurality of seal ridges being formed of a first axially inboard facing substantially annular surface substantially normal to the axis of said seal and extending radially outwardly from said first member and a second annular substantially outboard facing sloping surface extending axially and radially outwardly from said first member, each of said surfaces intersecting to form a sharp angle radially outermost termination of each of said seal ridges;



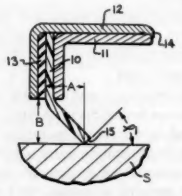
a second plurality of at least four radially inwardly extending resilient seal ridges molded integral with and radially inwardly extending from said second member for sealingly and frictionally engaging said axle, each of said seal ridges being formed of a first axially inboard facing substantially annular surface substantially normal to the axis of said seal and extending radially inwardly from said member and a second annular substantially outboard facing sloping surface extending axially and radially inwardly from said second member, said surfaces intersecting to form a sharp angle radially innermost termination of each of said seal ridges whereby the resistance to axial sliding of said first plurality of said seal ridges into said bore is less than the resistance to axial sliding of said second plurality of said seal ridges onto said axle when said seal is placed in said bore of said wheel hub and said wheel hub is forced axially onto said axle.

4,283,064

ROTARY SHAFT SEAL

Thomas E. Staab, Hinsdale, and Joseph Antonini, Chicago, both of Ill., assignors to Dana Corporation, Toledo, Ohio

Continuation of Ser. No. 716,501, Aug. 23, 1976, abandoned. This application Nov. 21, 1977, Ser. No. 853,166
Int. Cl.³ F16J *15/32*
U.S. Cl. 277—81 R **11 Claims**



1. A hydrodynamic shaft seal comprising an annular casing

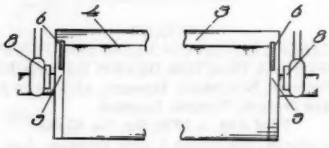
having an axis and a sealing element, said casing engaging the radially outer edge of the sealing element, the sealing element comprising an annular disc of elastomeric material, said disc comprising two faces and a generally annular inner surface extending between and forming edges with said faces, at least one of said edges being radially displaced from said casing axis by varying distances when said sealing element is unstressed, wherein said at least one of said edges is a circumferentially continuous radially innermost sealing edge of said seal when said seal is mounted on a shaft.

4,283,065

APPARATUS TO PREVENT LEAKAGE OF LIQUID

Mamoru Hirao, Okayama, Japan, assignor to Kagaku Kenkyujo Kabushiki Kaisha Hayashibara Seibutsu, Okayama, Japan

Filed Apr. 12, 1979, Ser. No. 29,470
Claims priority, application Japan, Apr. 12, 1978, 53/42762
Int. Cl.³ F16J *15/44*
U.S. Cl. 277—135 **1 Claim**



1. An apparatus for the prevention of leakage of liquid from between the drums and end plates of a double drum drier, the end plates of which are in rotating contact with the drums, near each end thereof, with a slight open area at the bottom of the end plates near the point of closest approach to one another of the external surfaces of the drums, comprising:

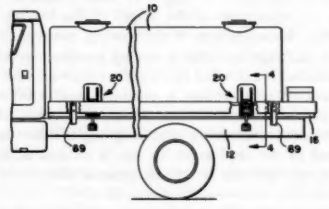
nozzle means for applying compressed air or gas to the slight opening formed between the end plate and the rotating drum, said nozzle means comprising at least one nozzle disposed on the exterior of and directed toward said slight opening.

4,283,066

TANK SUPPORT FOR A TANK TRUCK

Carl E. Brown, Troy, and Edwin C. Rosenberger, Piqua, both of Ohio, assignors to Chem-Lawn Corporation, Columbus, Ohio

Filed Nov. 7, 1979, Ser. No. 92,244
Int. Cl.³ B60P *3/22*
U.S. Cl. 280—5 D **12 Claims**



1. In a tank truck including a main frame, supporting wheels, a cab and a tank mounted behind said cab, the improvement comprising:

a bed frame disposed above said main frame;

means interconnecting said bed frame to said main frame; and

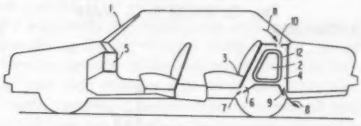
means mounting said tank resiliently within the horizontal plane of said bed frame and including a plurality of upper tank holddown brackets secured to said tank, a plurality of lower tank holddown brackets secured to said bed frame, and means resiliently interconnecting said upper tank holddown brackets to said lower tank holddown brackets.

4,283,067

PASSENGER MOTOR VEHICLE WITH A TANK ARRANGED BEHIND THE REAR SEATS

Andreas Weber, Lorch, and Manfred Schaefer, Weinstadt, both of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Nov. 6, 1979, Ser. No. 91,762
Claims priority, application Fed. Rep. of Germany, Nov. 15, 1978, 2849485
Int. Cl.³ B60K *15/02*
U.S. Cl. 280—5 A **7 Claims**



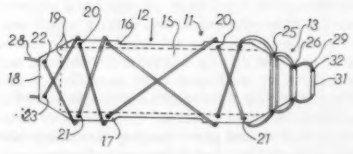
1. A passenger motor vehicle which includes a seat means, an air conditioning system, and a fuel tank, characterized in that a space means is provided to a rear of the seat means for accommodating the fuel tank, first inflow opening means are provided for enabling an inflow of dynamic air produced by movement of the vehicle into the space means, second inflow opening means are provided for enabling an inflow of relatively cool exhaust air out of an interior space of the vehicle into the space means, and in that outflow opening means are provided for enabling a flow of air out of the space means so as to enable an air cooling of the fuel tank.

4,283,068

SLED STRUCTURE

Shirley A. Keyser, P.O. Box 52, Butte, Mont. 59701

Continuation-in-part of Ser. No. 17,490, Apr. 23, 1979, abandoned. This application Jan. 8, 1980, Ser. No. 110,550
Int. Cl.³ B62B *13/16*; A61G *1/00*
U.S. Cl. 280—19 **11 Claims**



1. A sled structure including a body supporting portion, a head supporting portion and a towing portion; said body supporting portion and said head supporting portion together forming a substantially flat flexible sheet-like structure, said body supporting portion being of a generally elongated configuration, said body supporting portion including a main section with peripheral side sections and an end section, said side and end sections being foldable with respect to said main section, a plurality of fastening means disposed in said side and end sections, said head supporting portion extending from one end of said body supporting portion, a tubular passage extending from one edge of said sled structure to the other adjacent the juncture of said body supporting portion and said head supporting portion, a second tubular passage adjacent the free end of said head supporting portion, said second tubular passage being spaced from and substantially parallel to said first tubular passage, continuous cord means extending from fastening means adjacent one corner of said end section to fastening

means located in the side section remote from said corner and thereafter to fastening means disposed in the other side section and back and forth between fastening means in said sections in a zigzag pattern to said first tubular passage and therethrough to the opposite edge of said sled structure and then through said second tubular passage, said cord means forming a loop portion and returning through said second tubular passage and said first tubular passage in directions opposite to its initial path therethrough and thereafter between said fastening means in said side sections in a zigzag pattern disposed from said initial zigzag pattern to fastening means located in said end section adjacent to another corner thereof.

4,283,069

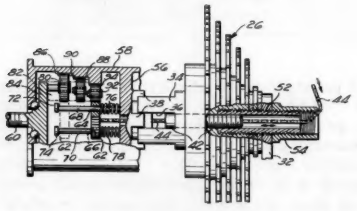
MULTIPLE SPEED BICYCLE DRIVE

Kenneth J. Citelli, 258 Banner Ave., Ventura, Calif. 93003

Filed Feb. 8, 1980, Ser. No. 119,949

Int. Cl.³ B62M *9/12, 11/14*

U.S. Cl. 280—236 **1 Claim**



1. In combination with a bicycle, said bicycle having a driving wheel which is to be rotatable driven by a manually operated pedal assembly, said manually operated pedal assembly operating through a chain, said driving wheel having a central hub assembly, the improvement comprising:

first and second gear changing mechanisms, said first gear changing mechanism connected to said second gear changing mechanism and located exteriorly thereof, said first gear changing mechanism comprising a plurality of connected different sized sprockets, said chain connected to said sprockets, said first gear changing mechanism to be manually operable to change from one of said sprockets to another of said sprockets to thereby change the ratio of the number of revolutions of said pedal assembly to the number of revolutions of said driving wheel; and

said second gear changing mechanism being mounted within said hub and in driving relationship therewith, said second gear changing mechanism to be manually operable to also change the ratio of the number of revolutions of said pedal assembly to the number of revolutions of said driving wheel, said second gear changing mechanism being operated independent of said first gear changing mechanism, said second gear changing mechanism being operable primarily when said bicycle is stationary while said first gear changing mechanism being operable only when said bicycle is moving.

4,283,070

RECUMBENT BICYCLE

Richard J. Forrestall, Wilmington, and David G. Wilson, Cambridge, both of Mass., assignors to Fomac, Inc., Wilmington, Del.

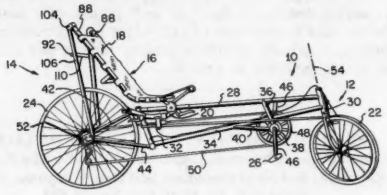
Filed Dec. 26, 1979, Ser. No. 107,348

Int. Cl.³ B62K *17/00, 21/18*

U.S. Cl. 280—274 **19 Claims**

1. A recumbent bicycle including a bicycle frame, a front wheel rotatable about a turning axis, a rear wheel and drive means including foot pedals for driving said rear wheel, the improvement comprising

a carriage unit including (1) a seat assembly and (2) handle bars rotatable about a steering axis and coupled to said front wheel so that movement of said handle bars about said steering axis causes said front wheel to rotate about



said turning axis, said carriage unit being mounted on said frame so as to be adjustably movable toward and away from said foot pedals in order to accommodate various sized riders.

4,283,071

ADJUSTABLE LENGTH COUPLING FOR TOWING AND LIFTING A TRACTOR DRAWN IMPLEMENT

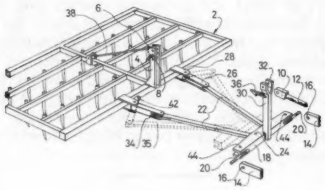
Jens S. Pedersen, Nrhyndelse, Denmark, assignor to A/S Plovfabrikken Fraugde, Fraugde, Denmark

Filed Aug. 3, 1979, Ser. No. 63,448

Claims priority, application United Kingdom, Aug. 5, 1978, 32385/78

Int. Cl.³ A01B *59/043, 63/102, 73/00*

U.S. Cl. 280—415 A **15 Claims**



1. A traction coupling for coupling a tractor of the tractor lift fitted type with an implement such as a cultivator propelled by the tractor, comprising a traverse constructed for mounting between opposed ends of lift arms of the tractor lift and a towing member projecting rearwardly from the traverse and constructed for connecting with the implement, characterized in that the towing member is pivotally connected to the traverse and is adjustable in length in such a manner that the coupling, by adjustment of the length of the towing member and without disconnection of the towing member or an end thereof, is shiftable between a towing position, in which the towing member is extended rearwardly relative to the traverse and an articulated coupling is obtained, and a lift mounted position, in which the towing member is contracted relative to the traverse and a relatively rigid coupling is achieved so that a front end of the implement, in use, is located adjacent the traverse in traction and lifting engagement therewith.

4,283,072

INTEGRAL VEHICLE TRAILER HITCH AND ELECTRICAL SYSTEM

Frank Deloach, Jr., 2908 Spanford Rd., Panama City, Fla. 32405

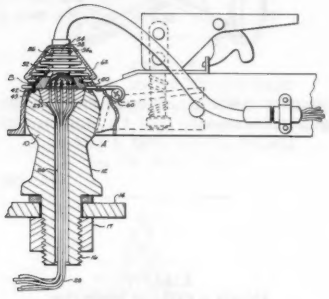
Filed Sep. 21, 1979, Ser. No. 77,675

Int. Cl.³ B60D *1/06, 1/08*

U.S. Cl. 280—422 **11 Claims**

1. A trailer hitch for connecting a towing vehicle having an electrical power source to a towed vehicle having at least one electrically actuated device, said hitch comprising: a ball sec-

tion adapted to be connected to one of said vehicles, said ball section including a vertically disposed face having electrical contact means and means adapted to connect said contact means to one of said power source and said device; a socket coupling adapted to be connected to the other of said vehicles, said socket coupling including a housing for tiltably and rotationally engaging said ball section for transmitting towing force between said vehicles, a cap section having a vertically disposed face overlying said ball section face, said cap section face having electrical contact means for engaging said ball



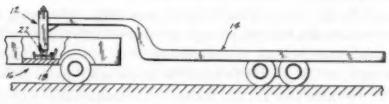
section contact means, means adapted to connect said cap sectin contact means to the other of said power source and said device, and means for mounting said cap section on said housing whereby said housing may move relative to said cap section during tilting of said housing relative to said ball section, but said cap section may rotate relatively with said housing relative to said ball section; said cap section and said ball section having interengaging means for maintaining said faces in a constant parallel relationship during said tilting whereby said contact means are maintained in interengagement.

4,283,073

BALL TYPE GOOSENECK HITCH

John J. Gostomski, Omaha, Nebr.; Arnold R. Gostomski, Arlington, Tex., and Eugene F. Dauel, Malmo, Nebr., assignors to Atwood Vacuum Machine Company, Rockford, Ill.

Filed Oct. 9, 1979, Ser. No. 82,702
Int. Cl.³ B60D *1/06*
U.S. Cl. 280—508 **10 Claims**



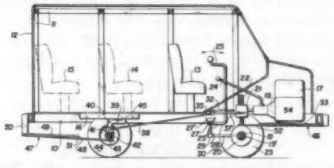
6. In combination,
a wheeled vehicle having forward and rearward ends, said wheeled vehicle having a support member at the forward end thereof,
a hitch means secured to said support member,
a prime mover having an upstanding coupler ball mounted thereon for coupling connection to said hitch means,
said hitch means comprising a substantially horizontally disposed support member, a coupler mounted on said support member and extending upwardly therefrom and having an open lower end, said coupler adapted to receive the coupler ball therein,
a slide member slidably mounted below said support member and
being movable between forward, intermediate and rearward positions relative to said support member,
a shaft operatively rotatably mounted on said support member rearwardly of said slide member and being disposed transversely with respect to said slide member,
said shaft being selectively movable between first, second and third rotational positions, said shaft being normally positioned in said first position,
said shaft having an actuator element mounted thereon for rotation therewith, said actuator element being offset with respect to the rotational axis of said shaft,
said actuator element being positioned between said shaft and the rearward end of said slide member when said shaft is in its first position to prevent the rearward movement of said slide member thereby maintaining the coupler ball in said coupler,
said actuator element being positioned below the axis of said shaft when said shaft is in its third position to permit said slide member to move rearwardly to expose the lower end of said coupler,
means for selectively maintaining said shaft in its said second position during the initial stages of the coupling operation whereby engagement of the coupler ball with the forward end of said slide member will move said slide member rearwardly and rotate said shaft from its second position to its third position, and means for automatically returning said shaft to its first position after said coupler ball has moved into said coupler.

4,283,074

NARROW TRACK ECONOMY MOTOR VEHICLE

Hubert Tidwell, Box 57, Wellington, Utah 84542

Filed Oct. 24, 1979, Ser. No. 87,731
Int. Cl.³ B62D *9/02*
U.S. Cl. 280—772 **4 Claims**



1. A narrow track economy vehicle comprising a united main frame and vehicle body, a rear axle for the vehicle having narrow track rear wheels, a front swing axle for steering the vehicle having a pair of narrow track front wheels, front wheel power drive means for the vehicle, spring suspension means for the vehicle coupled between the vehicle main frame and said rear and front swing axles, a master control lever for the vehicle, a transverse axis rocker shaft coupled to the control lever and being turned by the swinging of the control lever in a fore and aft direction, the control lever being swiveled with relation to the rocker shaft for simultaneous swinging from side-to-side in either direction, a steering linkage coupled between the rocker shaft and front swing axle whereby fore and aft swinging of the control lever can effect steering of the vehicle by turning the swing axle in opposite directions, and an additional linkage including a laterally shiftable slotted link engaged with the control lever and shifted thereby when the control lever is swung from side-to-side, and said additional linking including camming means coupled with said laterally shiftable slotted link and acting on said main frame to elevate one side of the main frame to thereby tilt the united main frame and vehicle body in one direction while the vehicle is negotiating a curve.

4,283,075

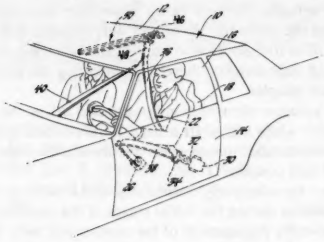
PASSIVE OCCUPANT SHOULDER BELT

Gary A. Wize, Washington, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Feb. 1, 1980, Ser. No. 117,618

Int. Cl.[3] B60R *21/10*

U.S. Cl. 280—804 **3 Claims**



1. In combination with a vehicle body having a roof and an occupant seat, a passive restraint system comprising:

a shoulder belt having an upper end and a lower end;

mounting means fixedly attaching the upper shoulder belt end on the vehicle roof generally rearward and at one side of the seat;

retractor means retractably mounting the lower shoulder belt end at a low location at the opposite side of the seat to dispose the shoulder belt diagonal restraining position across the occupant;

a track extending longitudinally along the roof forwardly from the mounting means;

a belt carriage movable along the track and having a belt engaging means thereon adapted to progressively stow the shoulder belt along the roof during forward movement of the belt carriage along the track; and

belt stiffening means associated with a portion of the upper belt end adjacent the mounting means and adapted to be engaged by the belt engaging means and abruptly pivoted forward to thereby raise the stiffened shoulder portion from the diagonal restraining position to the stowed position along the roof immediately upon initiation of forward movement of the carriage.

4,283,076

SEATBELT SYSTEM

Muneharu Matsunami; Toshio Saito; Akio Yoshida, and Nobuyuki Inokuchi, all of Aichi, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha and Kabushiki Kaisha Tokai Rika Denki Seisakusho, both of Aichi, Japan

Filed Oct. 30, 1979, Ser. No. 89,443

Claims priority, application Japan, Oct. 30, 1978, 53-149154[U]

Int. Cl.[3] B60R *21/10*

U.S. Cl. 280—806 **6 Claims**

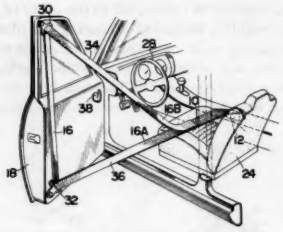
1. A seatbelt system comprising:

(a) an inner webbing;

(b) an outer webbing whose opposite ends are secured to one end of said inner webbing;

(c) an emergency locking retractor for winding up the other end of said inner webbing by its biasing force and preventing said inner webbing from being wound off in an emergency of the vehicle, said retractor being secured to the substantially central portion of the vehicle; and

(d) a pair of slip anchors provided at the upper and lower portion of a vehicle door for turning back the intermediate portions of said outer webbing, the portion between one of the slip anchors and one end of the inner webbing constituting a waist restraining portion for an occupant and another portion between the other of the slip anchors and one end of the inner webbing constituting a shoulder restraining portion for the occupant; whereby the vehicle



is opened or closed so as to automatically fasten the webbings to the occupant.

4,283,077

INDOLE COLOR FORMER

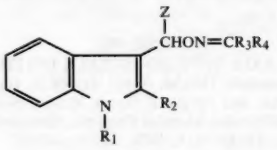
Paul J. Schmidt, Sharonville, and William M. Hung, Cincinnati, both of Ohio, assignors to Sterling Drug Inc., New York, N.Y.

Filed Mar. 6, 1980, Ser. No. 127,649

Int. Cl.[3] B41M *5/16, 5/18, 5/22*

U.S. Cl. 282—27.5 **3 Claims**

1. A pressure-sensitive carbonless duplicating system or thermal marking system containing a support sheet coated with a color-forming substance comprising a compound having the formula



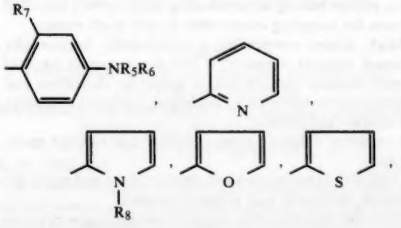
wherein:

R_1 is hydrogen or lower-alkyl;

R_2 is hydrogen, lower-alkyl or phenyl;

R_3 and R_4 are independently hydrogen, alkyl containing 1–8 carbon atoms, benzyl, phenyl, phenyl substituted with 1 or 2 halo, lower-alkyl, lower-alkoxy or di-lower-alkylamino groups, or CR_3R_4 is cyclopentyl, cyclohexyl or cycloheptyl, provided that R_3 and R_4 are not simultaneously hydrogen; and

Z is naphthyl, biphenylyl, phenyl, phenyl substituted with 1 or 2 lower-alkyl, lower-alkoxy, phenyl, halo or nitro groups or Z is a substituent having the formula



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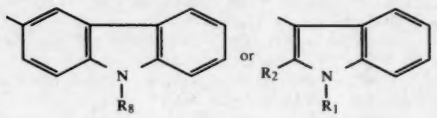


where in the above formulas

R_5 and R_6 are independently lower-alkyl or benzyl;

R_7 is hydrogen, lower-alkyl, lower-alkoxy, halo or di-lower-alkylamino, and

R_8 is hydrogen or lower-alkyl.

4,283,078

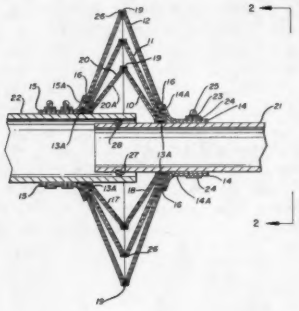
FLEXIBLE JOINT PROTECTOR

Victor H. Ross, 111 Okinawa Dr., and Victor H. Ross, Jr., Old Apple Orchard, R.D. #3, both of New Castle, Pa. 16105

Filed May 1, 1980, Ser. No. 145,872

Int. Cl.³ F16L *11/12*

U.S. Cl. 285—45 **4 Claims**



1. A flexible joint protector for use with a pipe joint and comprising an assembly of several spaced individual accordian type bellows, each of said bellows being annular and of different outer diameters, said bellows positioned one within the other with the largest diameter bellows defining the outside of said assembly and the smallest of said bellows defining the inside of said assembly, each of said bellows formed of a pair of flat circular flexible members having central openings and joined at their outer peripheral edges, each of said individual bellows arranged in juxtaposition and joined to one another in the areas about their central openings, each of said bellows made of air impervious material, a pair of tubular sleeves secured to the joined areas about said central openings of said bellows in oppositely disposed outwardly extending relation thereto, clamps securing said sleeves to said pipes on either side of said joint.

4,283,079

ULTRA HIGH VACUUM SEAL ARRANGEMENT

Robert Flaherty, Mt. Lebanon, Pa., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

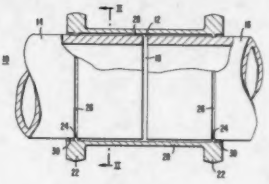
Filed Mar. 30, 1978, Ser. No. 891,675

Int. Cl.² F16L *13/14*

U.S. Cl. 285—381 **7 Claims**

1. Apparatus for removably sealing two concentric longitudinally aligned metallic tubes in an ultra high vacuum system comprising:

a tubular seal formed of a heat recoverable metallic material having integrally formed reacting rings of enlarged cross section near the ends thereof, said reacting rings extending radially outward from the balance of said tubular seal, each said ring having associated therewith an integral protruding circumferential lip, each said lip extending radially inward from the balance of said seal in longitudinal alignment with a corresponding ring, said seal sized such that one of said lips circumferentially contacts one of



said concentric tubes upon transformation from a martensitic to austenitic state with a pressure sufficient to plastically deform said one tube and another of said lips circumferentially contacts the other of said tubes upon said transformation with a pressure sufficient to plastically deform said other tube.

4,283,080

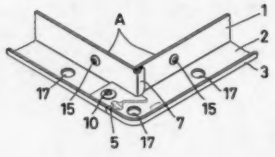
FLANGE FOR A DUCT

Kenji Nakajima, 3-5, 6-chome, Nagayoshi-deto, Hirano-ku, Osaka-shi, Osaka-fu, Japan

Filed Jan. 2, 1980, Ser. No. 109,186

Int. Cl.³ F16L *23/00*

U.S. Cl. 285—405 **3 Claims**



1. A flange for a polygonal cross-section duct, comprising a plurality of flange pieces connected together in a polygonal flange, each of said flange pieces having a base wall for being secured to the duct and a flange wall connected along one edge of said base wall and extending perpendicular to said base wall and having means for being connected to an opposed flange, said flange wall having a transverse extension at one end of said flange piece extending past said base wall at an angle to the length of said flange piece corresponding to the angle between the walls of the duct, said transverse extension being connected to the flange wall of the flange piece which is next adjacent the one end of said flange piece, and said base wall having a hook at the other end of said flange piece bent around the end of the base wall of the flange piece next adjacent the other end of said flange piece.

4,283,081

LOCK FOR PORTABLE CONTAINER

Vitaly I. Shalaev, ulitsa Bairona, 161G, kv. 32; Alexandr K. Protasov, ulitsa Vladimira Konovalova, 43; Vladimir I. Vasiliev, ulitsa Bljukhera, 26, kv. 172, and Viktor I. Ponomarev, ulitsa Gvardeitsev Sheronintsev, 69/42, kv. 37, all of, Kharkov, U.S.S.R.

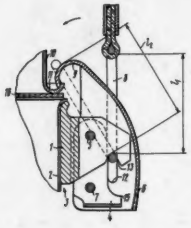
Filed Aug. 27, 1979, Ser. No. 70,145

Int. Cl.³ E05C *5/02*

U.S. Cl. 292—113 **6 Claims**

1. A lock for a container having a body with sidewalls and a cover, the lock comprising a lug mounted fixed to a sidewall of the container and having a transverse groove; a latch assem-

bly mounted on said lug for releasably locking the cover on the container; said latch assembly comprising a link pivotally mounted on said lug, a latch pivotally mounted on the link and having a hooked end for engaging the cover and locking it on to the container body when the latch is pivoted in a direction to a position downwardly toward engaging said link and for releasing the cover when the latch is pivoted in a direction upwardly away from the link, the latch having longitudinal



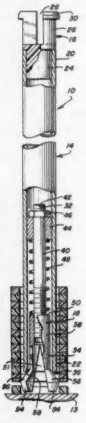
slots spaced from each other and disposed to lie in a plane in which said groove is disposed when the latch is positioned locking the cover on the container body, a stirrup movable in said slots for entering said transverse groove and maintaining the latch fixed relative to the lug to maintain the lock locked when the latch is disposed in the position for locking, and retaining means coactive with the stirrup for releasably maintaining the stirrup in the transverse groove.

4,283,082

TOOL FOR RETAINING AND RELEASING RINGED ELEMENTS

Wayne R. Tracy, 132 Royal St., Chicopee, Mass. 01020

Filed Apr. 28, 1980, Ser. No. 144,430
Int. Cl.³ B65G *7/12*
U.S. Cl. 294—15 **4 Claims**



1. A tool for retaining and selectively releasing ringed members, said tool including ringed member retaining and releasing means at one end thereof and ringed member capturing means at the other end thereof; said tool comprising, in combination:

an axially elongated, hollow tube having oppositely disposed open ends;

the retaining and releasing means including an integrally formed, elongated central body portion, a reduced diameter pin portion and a threaded end portion; the threaded end portion of said retaining and releasing means being secured for reciprocation adjacent one of said open ends of said tube and the other end of the retaining and releasing means being free; said retaining and releasing means including radially expandable means formed by a plurality of axial incisions through the central body means to define a plurality of discrete sections, at least part of the axial length of said incisions extends outwardly of said one end of said hollow tube when said retaining and releasing means is operatively assembled therein, said expandable means adapted for selective, axial reciprocation between a first, radially retracted position when pressure is applied against said free end, and a normally biased, radially expanded position when no pressure is applied to said free end, the outer diameter of the expandable means in the retracted position being equal to or less than the outer diameter of the hollow tube;

whereby the tool is adapted to slidably retain the ringed members about the outer diameter of the tube when the retaining and releasing means is in the normally biased, radially expanded position, and said tool is adapted to release ringed members from about the outer diameter of the tube when the retaining and releasing means is in the radially retracted position due to the application of pressure against the free end thereof; and

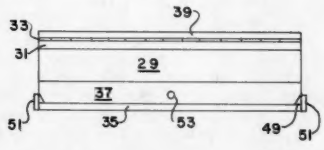
an end plug having opposed ends, one end of said plug being secured to the end of said tube opposite the end securing said retaining and releasing means; the other end of said plug being slotted so as to compress radially when radial force is applied to the slotted end of said plug, said slotted end of said plug including a flange of a diameter greater than the outer diameter of said tube and greater than the inner diameter of ringed members adapted for use with the tool; whereby the slotted flange of the plug may be radially compressed to capture ringed members thereover.

4,283,083

VEHICLE-ATTACHED ARTICLE CARRIER

Raymond L. Johnson, Rte. 4 Box 268A, Texarkana, Ark. 75502

Filed May 30, 1980, Ser. No. 154,662
Int. Cl.³ B60R *11/06*
U.S. Cl. 296—24 R **13 Claims**



1. An article carrier adapted to be mounted on a closure of a vehicle of the type that has a sidewall, said sidewall and said closure defining part of said vehicle, said closure being movable between open and closed positions, said closure also having an inner wall which has an end portion that abuts said sidewall when the closure is in the closed position, said article carrier comprising:

article carrier means comprising (a) a base member which is arranged for attachment to the inner wall of said closure, and (b) a lid which may be opened to gain access to said article carrier means,

said lid having a flange which extends therefrom to a position between a portion of said sidewall and the closure when said base member is attached to said closure and said closure is in the closed position, whereby to securely hold said lid in its closed position.

4,283,084

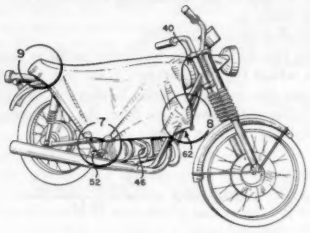
MOTORCYCLE COVER

Donald A. Gallagher, Ventura, Calif., assignor to Westworld Enterprises, Ventura, Calif.

Filed Dec. 12, 1978, Ser. No. 968,821

Int. Cl.³ B62J *19/00*

U.S. Cl. 296—78.1 **7 Claims**



1. A portable protective covering for a motorcycle having a seat located higher than the motorcycle engine and a front frame located forward thereof comprising a foldable sheet having a first end portion generally defined by coverging edges each of which merge into a curved-end edge corresponding to the curvature of the back end of said motorcycle seat and adapted to interfit said seat and thereby become frictionally engaged therewith, said first end portion extending into a central portion and an opposing second end portion terminating at a front edge having opposing corners that include corresponding attachment means for releasably connecting said corners to each other across said front framework, said central portion including opposing lateral portions adapted to cover each side of a motorcycle with each lateral portion terminating in a lateral edge having engagement means for releasable connection to a corresponding motorcycle part.

4,283,085

PIVOTAL HOOD ARRANGEMENT, ESPECIALLY IN MOTOR VEHICLES

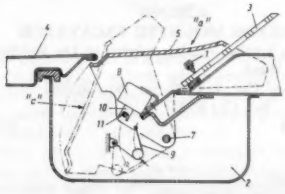
Bruno Sacco, Sindelfingen, and Hermann Renner, Magstadt, both of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart-Untertuerkheim, Fed. Rep. of Germany

Filed Nov. 17, 1978, Ser. No. 961,690

Claims priority, application Fed. Rep. of Germany, Nov. 30, 1977, 2753371

Int. Cl.³ B60J *1/20*

U.S. Cl. 296—84 R **11 Claims**



1. A pivotal hood-like structure for covering a separate aggregate space underneath an engine hood for the accommodation of a windshield wiper installation, said aggregate space being arranged between the engine space and passenger space of a motor vehicle within the area underneath the windshield thereof, said hood-like structure comprising:

a hood normally covering said separate aggregate space when in a closed position;

means for mounting said hood so as to be pivotal about a pivot axis into a first open position, whereby said windshield wiper installation may be operated, and into a second open position, whereby increased access to said separate aggregate space may be afforded for purposes of maintenance and repair;

a reciprocable piston means for displacing said hood between the closed and first open positions;

means fixedly attached to said hood for enabling the reciprocating motion of the reciprocable piston means to be converted into pivotal motion, said enabling means being adapted to be in operable engagement with said piston means when said hood is in its closed and first open positions; and

means positioned between said vehicle and said hood, for biasing said hood toward said closed position and for biasing said enabling means into operable engagement with said piston means when said hood is in its closed and first open positions.

4,283,086

BODY FOR VEHICLES AND VEHICLES CARRYING SAID BODY

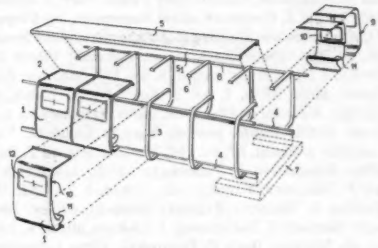
Andre M. R. Morin, Chatillon sur Thonet, France, assignor to SOVAM, Parthenay, France

Filed Sep. 12, 1979, Ser. No. 74,746

Claims priority, application France, Sep. 14, 1978, 78 26482; Apr. 17, 1979, 79 09671

Int. Cl.³ B62D *29/04*

U.S. Cl. 296—178 **15 Claims**



1. A vehicle body comprising a plurality of identical modular elements connected side by side to each other to define one side of the body, additional identical modular elements defining the other side of the body, each of said modular elements including an upper portion that forms part of the roof of the body,

a central beam running longitudinally of the body along the center of the roof of the body,

and angles provided on the ends of the modules for connecting the side walls to the beam.

4,283,087

SUPPORT UNIT FOR A DRIVER'S CAB IN A UTILITY VEHICLE

Wolfgang Kauss, Berlin, and Ludwig Muncke, Feldkirchen-Westerham, both of Fed. Rep. of Germany, assignors to Fritzmeier AG, Lenzburg, Switzerland

Filed Dec. 12, 1979, Ser. No. 102,661

Claims priority, application Fed. Rep. of Germany, Dec. 13, 1978, 2853806

Int. Cl.³ B62D *33/06*

U.S. Cl. 296—190 **9 Claims**

1. An apparatus for compensating relative dynamic movement of the passenger space of a vehicle comprising;

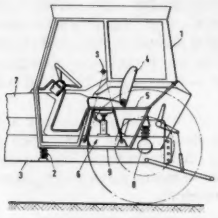
at least one support means mounted to the chassis of the vehicle, the support means having a piston supported by the passenger space by flexible means;

a fluid circuit providing a source of pressure or a non-pressurized return;

a directional control means for connecting the pressure side

of the piston to either the source of pressure or to the non-pressurized return;

a lever means supported by the passenger space, the lever means having a first arm means for actuating the directional control means and a second arm means; and



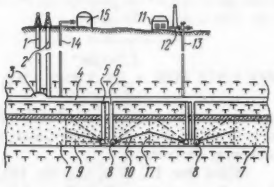
an adjusting cylinder means having a piston connected to the second arm means, the pressure side of the adjusting cylinder piston being in fluid connection with the pressure side of the support means piston by an adjustable fluid throttling means.

4,283,088

THERMAL—MINING METHOD OF OIL PRODUCTION

Vladimir P. Tabakov, ulitsa Sofii Kovalevskoi, 4a, kv. 125; Boris P. Kornev, ulitsa Bulatnikovskaya, 1v, korpus 2, kv. 10; Leonid N. Buchenkov, ulitsa Geroev Panfilovtsev, 1, korpus 5, kv. 135; Andrei T. Gorbunov, ulitsa Nagornaya, 16, korpus 2, kv. 71, all of Moscow; Vladilen E. Kaschavtsev, ulitsa Sovetskaya, 64, kv. 41, Moskovskaya oblast, Noginsk; Viktor P. Pilatovsky, 1 Dmitrovsky proezd, 8, kv. 137, Moscow; Evgeny I. Gurov, ulitsa Mira, 2, kv. 3, Komi ASSR, Ukhta, poselok Yarega; Alexandr I. Obrezkov, ulitsa Neftyanikov, 1, kv. 14, Komi ASSR, Ukhta, poselok Yarega; Gadel G. Vakhitov, Leninsky prospekt, 67, kv. 188, Moscow; Rishad T. Bulgakov, ulitsa Beloglazova, 8, Tatarskaya ASSR, Almetievsk; Vladimir P. Maximov, 1 Dmitrovsky proezd, 8, kv. 162, Moscow; Rafkhat A. Maxutov, Leninsky prospekt, 67, kv. 164, Moscow; Alexandr I. Shnirelman, Uralskaya ulitsa, 6, korpus 6, kv. 45, Moscow; Boris E. Dobroskok, ulitsa Voroshilova, 18, kv. 2; Khalim A. Asfandiyarov, ulitsa Tukaya, 73a, kv. 8, both of Tatarskaya ASSR, Bugulma, Airat K. Fatkullin, deceased, late of ulitsa Tukaya, 75a, kv 10, Tatarskaya ASSR, Bugulma, by Neili N. Fatkullin, executrix, all of U.S.S.R.

Filed May 14, 1979, Ser. No. 38,407
Int. Cl.³ E21C *41/10*
U.S. Cl. 299—2 **31 Claims**



1. Method for thermal-mining for the production of oil, which comprises

digging a combination of underground workings and at least one working tunnel;

drilling injection and producing wells from said working tunnel;

introducing a heat carrier into the oil-bearing bed until the same is heated to a temperature at which the oil acquires fluidity;

then further injecting a heat carrier into the oil-bearing bed through the injection wells at time intervals calculated by the following relation:

$$t_1 = c\gamma\tau L^2/l$$

wherein c = heat capacity of the oil-bearing bed J/deg,

l = temperature conductivity of the oil-bearing bed, m^2/s,

γ = specific weight of the oil-bearing bed, N/m^3,

L = graphic scale, m,

τ = dimensionless time ($L < \tau \leqq 1$);

withdrawing the oil from the producing wells at time intervals t_3 in which the time interval t_1 for injecting the heat carrier into the injection wells is divisible by the time interval t_3 for withdrawing oil from the producing wells, the multiplicity factor n being:

$$n = \frac{t_1}{t_3} \geqq 60 \text{ where } t_3 = \frac{A^2\mu m(\rho_1 - \rho_2)B}{2K\Delta p}$$

A = distance between injection and producing wells m,

p = pressure drop in the oil-bearing bed between injection and producing wells, N/m^2,

μ = oil viscosity, $N.s/m^2$,

m = porosity of the oil-bearing bed,

K = permeability of the oil-bearing bed, D,

$p_1 - p_2$ = change per cycle of the oil-bearing bed saturation with heat carrier,

B = dimensionless parameter ($O < B < \infty$);

and injecting the oil from said working tunnel through the underground workings up to the surface.

4,283,089

PRETREATMENT FOR FRACTURING COAL SEAMS

Raymond L. Mazza, Morgantown, W. Va.; H. Douglas Dahl, Pittsburgh, Pa., and Ronald W. Umphrey, Fairmont, W. Va., assignors to Conoco, Inc., Ponca City, Okla.

Filed Jun. 12, 1980, Ser. No. 158,669
Int. Cl.³ E21C *43/00*
U.S. Cl. 299—16 **6 Claims**

1. A method of pretreating and hyraulically fracturing a coal seam comprising:

(a) injecting a pretreatment material capable of swelling coal into a coal seam to be fractured, said material being injected at less than fracturing pressure;

(b) allowing the coal seam to swell as a result of contact with said material, thereby reducing the permeability of cleats in the pretreated portion of said coal seam; and

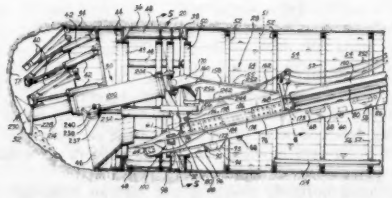
(c) subsequently subjecting said pretreated portion of said coal seam to hydraulic fracturing.

4,283,090

CONVEYOR MOUNTED EXCAVATOR

Tyman H. Fikse, Seattle, Wash., assignor to The Robbins Company, Seattle, Wash.

Filed Oct. 1, 1979, Ser. No. 80,408
Int. Cl.³ E21D *9/10, 9/12*
U.S. Cl. 299—33 **10 Claims**



1. In a tunneling machine having a self-propelled shield, an

elongate boom having a digging tool carrying front end portion, a carriage pivotally supporting the boom, control means carried by the boom support carriage for pivoting the boom up and down and sideways to move the boom about the tunnel face, and the improvement comprising:

a elongate, conveyor;

support and guideway means disposed along said conveyor for guiding the boom support carriage for longitudinal travel along said conveyor while preventing transverse movement of the carriage relative to said conveyor;

means for advancing and retracting the carriage along said support and guideway means to move the boom longitudinally relative to said conveyor; and

connection means for detachably connecting a forward portion of said conveyor to the tunneling shield, said connection means including:

first connection means for connecting a forward end portion of said conveyor to the tunneling shield for towing said conveyor with the tunneling shield while simultaneously permitting said conveyor to pivot about a horizontal axis and to a limited degree about a vertical axis relative to the tunneling shield; and

second connection means fixedly attached to the tunneling shield and engageable with the forward end portion of said conveyor to vertically support the forward end portion of said conveyor and permit the conveyor to slide longitudinally, rock about a horizontal axis and pivot a limited degree about a vertical axis relative to the tunneling shield, while preventing any appreciable vertical or lateral movement of the conveyor forward end portion relative to the tunneling shield.

4,283,091

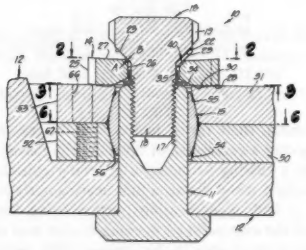
SHOCK PROOF FASTENER ASSEMBLY FOR VEHICLE WHEELS AND OTHER APPLICATIONS

Max L. Enders, 965 N. Fair Oaks Ave., Pasadena, Calif. 91103

Continuation-in-part of Ser. No. 623,578, Oct. 20, 1975, abandoned. This application Jun. 5, 1978, Ser. No. 912,566

Int. Cl.³ B60B *3/16*

U.S. Cl. 301—9 DN **27 Claims**



8. That improvement in a demountable dual wheel and hub assembly for a motor vehicle which comprises:

a wheel and brake drum unit having a ring of studs projecting axially from the face of said brake drum each having a threaded well in one end thereof;

a resilient split collet having a sliding fit over each of said studs and an axial length corresponding generally to the projecting length of said studs, said collet having the exteriors thereof tapering toward their respective ends at a taper angle of the order of 4 to 1;

a pair of wheels having a ring of tapered bores having centers coinciding with the axes of said ring of studs and the taper angle of portions of which bores is of the order of 4 to 1, and sized to internest over and contract said collets firmly and rigidly against said studs, the smaller diameter of said bores being substantially greater than the diameter of said studs; and

cap screw means having threads mateable with the threaded well of respective ones of said studs effective as the same are wrenched tight to clamp said wheels immovably to said hub as said collets are contracted rigidly against said studs thereby to isolate the threads of said cap screw means to said threaded wells from radial and torsional load stresses acting between said hub and said wheels when in use.

4,283,092

VEHICULAR BRAKING SYSTEM UTILIZING A HYDRODYNAMIC BRAKE AND FRICTION BRAKE

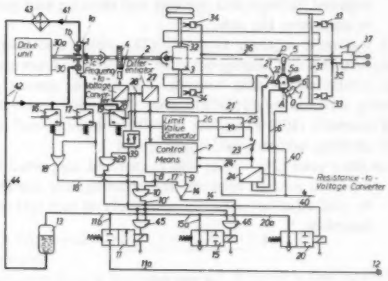
Klaus Sauka, Crailsheim, Fed. Rep. of Germany, and Hortz Muschelknautz, deceased, late of Crailsheim, Fed. Rep. of Germany (by Ingeborg Muschelknautz, heiress), assignors to Voith Turbo GmbH & Co. KG, Fed. Rep. of Germany

Filed Jun. 1, 1979, Ser. No. 44,457

Claims priority, application Fed. Rep. of Germany, Jun. 7, 1978, 2824909; May 10, 1979, 2918793

Int. Cl.³ B60T *8/02*

U.S. Cl. 303—3 **12 Claims**



1. A braking system for use in a vehicle in which a friction brake is associated with each wheel of the vehicle and a hydrodynamic brake is associated with an axle of the vehicle, said hydrodynamic brake applying a braking torque to said axle, the magnitude of said braking torque and therefore the magnitude of the deceleration of said axle varying as a function of the amount of fluid in said brake, said braking system comprising:

reference signal generating means for generating a first signal representative of a desired magnitude of said deceleration of said axle;

deceleration measuring means for generating a second signal representative of the actual magnitude of said deceleration of said axle, said deceleration measuring means comprising speed sensing means for generating a speed signal representative of the speed of said axle, and differentiating means for differentiating said speed signal so as to generate said second signal;

control means responsive to said first and second signals for varying said amount of fluid in said hydrodynamic brake in such a manner that said actual magnitude of said deceleration of said axle is adjusted towards said desired magnitude of said deceleration; and

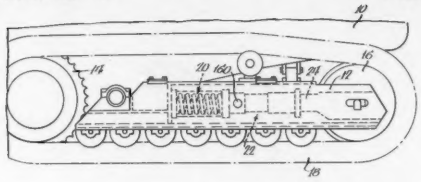
a first pressure switch means for monitoring the fluid pressure in said hydrodynamic brake and for preventing any rise therein once a given pressure in said hydrodynamic brake is reached.

4,283,093

TRACK ADJUSTER AND GUARD

Lawrence R. Cline, Oswego, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Oct. 23, 1978, Ser. No. 953,717
Int. Cl.³ B62D *55/30*
U.S. Cl. 305—10 **5 Claims**



1. A track roller assembly comprising:

a track roller frame (**12**) defining an elongated tunnel;

a pair of separated spaced apart elongated rails (**70,72**) extending through said tunnel;

a stop (**26**) at one end of said tunnel;

a spring recoil assembly (**20**) within said tunnel in abutment with said stop and supported by and nesting between said rails, said spring recoil assembly including a housing (**28**) containing a compression spring (**30**) and having an opening (**32**) oppositely from said stop and movable means (**36**) exposed through said opening and abutting said spring for compressing the same;

a hydraulic adjuster assembly (**22**) within said tunnel and supported by and nesting between said rails in abutment with, but unattached to, said housing, said adjuster assembly comprising a closed hydraulic chamber (**100**) with a movable piston assembly (**104**) extending therefrom through said opening and abutting said moveable means; and

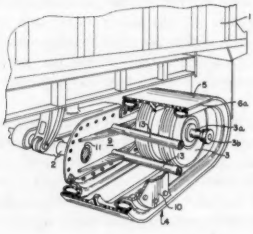
an idler yoke (**24**) within said tunnel and supported by said rails and nesting between and abutting, but not attached to, said adjuster assembly oppositely of said spring recoil assembly.

4,283,094

AIR SUSPENSION SYSTEM FOR VEHICLE TRACK

William R. Bertelsen, 2720 31st Ave., Rock Island, Ill. 61201

Filed Aug. 17, 1979, Ser. No. 67,652
Int. Cl.³ B62D *55/10*
U.S. Cl. 305—16 **11 Claims**



10. An air track apparatus for reducing surface pressure comprising:

means forming an endless track adapted to be entrained over the wheels of spaced axles of a vehicle to provide an upper and a lower run,

spaced side members cooperating with said means forming an endless track in providing a chamber,

pneumatic seal means positioned between said side members and said means forming an endless track to create a seal therebetween,

air supply means in communication with said seal means to direct pressure to a portion of said seal means thereby forming a pneumatic seal,

means connecting said air supply with said chamber for pressurization thereof to cause a portion of said lower run into contact with a supporting surface therebeneath,

pneumatic seal means includes air jet means in communication with said portion for directing a jet of air against said endless track to create a proximity effect,

said pneumatic seal means includes at least one hollow tubular member,

said portion of said seal means is a chamber defined by the interior of said hollow tubular member,

said air jet means comprises a plurality of aperture means formed through the periphery of the tubular member, and

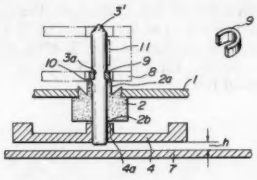
said at least one tubular member is mounted for movement relative to a respective side member.

4,283,095

CAPSTAN SHAFT THRUST PAD DEVICE

Akira Osanai, Hachioji, Japan, assignor to Olympus Optical Company Limited, Tokyo, Japan

Filed Mar. 16, 1979, Ser. No. 21,189
Claims priority, application Japan, Mar. 17, 1978, 53-30839
Int. Cl.³ F16C *17/04;* **B65H** *17/02*
U.S. Cl. 308—139 **2 Claims**

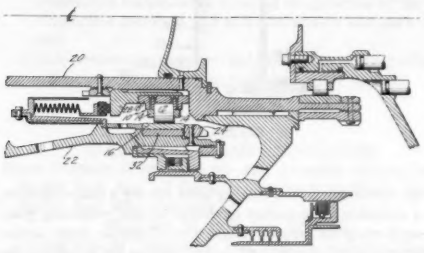


1. A capstan shaft thrust pad device for use with a tape cassette having a capstan shaft opening of a certain diameter, comprising a bearing including a generally cylindrical upper bearing portion which forms a first bearing surface, the outer diameter of said upper bearing portion being less than the diameter of the capstan shaft opening so that said upper bearing portion is receivable in the capstan shaft opening, and a lower bearing portion which forms a second bearing surface which is parallel to said first bearing surface, a capstan shaft supported by said bearing for rotation about the axis of said capstan shaft, said capstan shaft extending perpendicular to and beyond said first and said second bearing surfaces in the axial direction of said capstan shaft, a flywheel coaxially fixed to said capstan shaft beyond said second bearing surface, said flywheel having an end surface facing said second bearing surface to prevent axial movement of said capstan shaft in the direction of said lower bearing portion toward said upper bearing portion, and a thrust pad member fixed on said capstan shaft beyond said first bearing surface for preventing axial movement of said capstan shaft in the direction from said upper bearing portion toward said lower bearing portion, said thrust pad member extending radially from said capstan shaft by an amount less than the outer diameter of said upper bearing portion so that said thrust pad member can be received in the capstan shaft opening in the tape cassette together with said upper bearing portion and said capstan shaft.

4,283,096
INTERSHAFT BEARING

Harrison R. Picard, Granby; Claude P. Rotondo, Middletown; Harold K. Shaffer, Tolland, and Bertrand H. Brown, Glastonbury, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Continuation of Ser. No. 898,607, Apr. 21, 1978, abandoned.
This application Nov. 9, 1979, Ser. No. 92,899
Int. Cl.³ F16C *19/52*
U.S. Cl. 308—207 R **3 Claims**

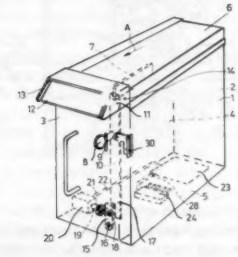


1. In combination bearing means mounted between an inner shaft and an outer shaft in coaxial alignment and said inner and said outer shafts rotating at different speeds, a plurality of circumferentially spaced rollers, an inner race between said inner shaft and said rollers and rotating with said inner shaft and an outer race between said outer shaft and said rollers and rotating with said outer shaft, said outer shaft rotating at a higher speed than said inner shaft, and a ring element for restricting radial growth thereof surrounding said outer race and in intimate contact with said outer shaft and said outer race and being contiguous therewith, said ring element fabricated from metal characterized by having a low thermal coefficient of expansion and a high elastic modulus relative to the material of said bearing means.

4,283,097
CASSETTE FOR HANDLING BANKNOTES OR THE LIKE

Leif Lundblad, Häradsvägen 102, S-141 41 Huddinge, Sweden

Filed Mar. 19, 1979, Ser. No. 21,696
Claims priority, application Sweden, Mar. 21, 1978, 7803222
Int. Cl.³ G07F *9/06*
U.S. Cl. 312—223 **4 Claims**

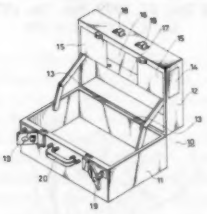


1. A cassette has four side walls (**1–4**), a bottom (**5**) and an upper, open side through which banknotes or other valuables can be placed into and removed from said cassette, said cassette being arranged to be placed in a housing (**25**) and being provided with a displaceable lid (**6**) arranged to close the said open side of said cassette, a locking means (**10**) arranged when the cassette is removed from the housing to hold the lid locked; an operating element (**8**) arranged to co-act with the locking means (**10**) and with a latching means (**15**), said latching means being arranged to be released in dependence upon a pre-set program when an electrical contact means (**24**) on the cassette co-acts with an electrical contact means (**26**) on the housing and when released permits the resetting of the operating means, characterized in that a signal circuit (**28**) is arranged to send a code signal to a detector circuit (**23**) when said electrical contact means (**24, 26**) co-act with each other whereby, when said signal coincides with the signal program in the detector circuit there is sent an opening signal for moving the latching means (**15**) to a non-latching position and when the cassette is located in the housing, the locking means (**10**) is arranged, subsequent to the latch (**15**) having been moved to a non-latching position, to simultaneously enable removal of the cassette from the housing to be prevented and to enable the lid (**6**) of the cassette to be opened to provide access to the contents of the cassette from outside the housing, and in that the lid (**6**) of the cassette is arranged, in its open position, to prevent said operating element (**8**) from being manipulated and thereby prevent removal of the cassette from the housing.

4,283,098
ATTACHE CASE HAVING DRAWER APPARATUS

Liang-Hung Sun, 5th Fl., No. 4-1, Lane 186, Tung-Hua St., Taipei, Taiwan

Filed Sep. 19, 1979, Ser. No. 77,003
Int. Cl.³ A47B *88/20*
U.S. Cl. 312—319 **6 Claims**



1. An improved attache case comprising:
(a) a base,
(b) a cover hinged to said base and defining a first compartment,
(c) a drawer apparatus provided in a chamber of said cover and defining a second compartment, and
(d) a driving means also provided in said chamber of the cover to engage with the drawer apparatus for controlling the moving and opening of the drawer apparatus, said cover and said driving means being independently operable to permit access to said first and second compartments.

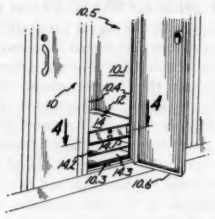
4,283,099
LOCKER CABINET

Thomas A. Burton, Rochester, Minn., assignor to Waters Instruments, Inc., Rochester, Minn.

Filed Jul. 16, 1979, Ser. No. 57,573
Int. Cl.³ A47B *67/02*
U.S. Cl. 312—351 **10 Claims**

1. A kit for assembling a cabinet within a standard locker having rear and side walls and front flanges extending inwardly of the side walls to define a locker door opening, the kit comprising side panels for vertical placement against interior surfaces of the side walls of the locker, the side panels having bracket receiving means on their confronting surfaces including upwardly facing surfaces and rearwardly facing surfaces, and at least one shelf panel positionable horizontally between the side panels with its side edges confronting the respective surfaces of the side panels and spacing the side panels apart a sufficient distance as to prevent their forward removal through the locker door opening, the shelf panel having bracket means

including means insertable downwardly into the bracket receiving means, the bracket means having surfaces respectively engageable with the upwardly facing and rearwardly facing



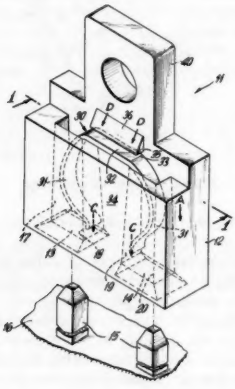
surfaces of the bracket receiving means of the side panels for preventing respective downward and forward movement of the shelf panel with respect to the side panels.

4,283,100

JUMPER PLUG

Rodney B. Griffin, and William A. Swenson, both of Aurora, Ill., assignors to Western Electric Company, Inc., New York, N.Y.

Filed Dec. 27, 1979, Ser. No. 107,758
Int. Cl.³ H01R *31/08*
U.S. Cl. 339—19 **2 Claims**



1. A jumper plug for making a secure electrical connection between two terminal pins comprising:

an insulating body having two holes extending through the body arranged to accept the two terminal pins,

a horseshoe-shaped electrically conductive resilient clip having each of its legs extending into a respective one of the holes to a sufficient length to make contact with a terminal pin inserted into the hole, and

means for retaining the clip in the body comprising a channel in the body of the plug, the channel being of sufficient width to accept the portion of the horseshoe-shaped clip which extends between the legs of the clip, for holding the clip within the body when the terminal pins are inserted into the plug, and a tab defining the top of the channel, the tab having a sloped upper wall,

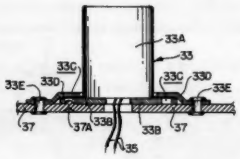
so that, as the pins are inserted into the holes, the retaining means cooperate with the resilient clip to make a secure electrical connection between each of the inserted terminal pins and a respective leg of the clip.

4,283,101

ROTATABLE LAMP SOCKET FOR INCANDESCENT PEDESTRIAN TRAFFIC SIGNAL, OR THE LIKE

Samuel Gould, San Pedro, and James S. Gould, Los Angeles, both of Calif., assignors to Indicator Controls Corp., Gardena, Calif.

Filed Aug. 6, 1979, Ser. No. 64,176
Int. Cl.³ H01R *13/645*
U.S. Cl. 339—2 L **4 Claims**



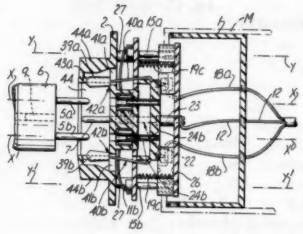
1. In combination: a mounting plate having a detent therein, and a rotatable lamp socket mounted on said mounting plate for supporting an electric lamp, said rotatable lamp socket comprising: a tubular-shaped socket portion for receiving the electric lamp; a flange mounted at one end of the socket portion and extending radially beyond the peripheral surface thereof, said flange having a plurality of detent holes therein for successively receiving the detent in the mounting plate as the socket is rotated; and a mounting ring coaxial with said flange and socket portion and extending over the surface of said flange and radially outwardly beyond the perimeter of said flange; and fastening means attaching said mounting ring to said mounting plate.

4,283,102

ELECTRIC SOCKET-OUTLET

Paul Richier, Montee Saint-Lazare, Digne, France

Filed Dec. 14, 1978, Ser. No. 23,446
Claims priority, application France, Dec. 16, 1977, 77 39232; May 22, 1978, 78 16340
Int. Cl.³ H01R *13/44*
U.S. Cl. 339—42 **10 Claims**



1. An electric socket-outlet comprising:

(a) an insulating casing having at least front and back walls,

(b) holes through said front wall for the reception of plug pins,

(c) conductive sockets mounted on said front wall aligned with said holes and intended to receive the plug pins,

(d) an insulating connection panel within said casing and displaceable parallel with the axes of the said holes,

(e) resilient means ensuring the return of the said connection panel to the vicinity of the said front wall on withdrawal of the plug pins,

(f) contacts mounted on said back wall and adapted for connection to an electric current source,

(g) electrically conductive connection members mounted on

said displaceable panel extending towards said back wall and aligned with said contacts and spaced from the said contacts when the connection panel is occupying a position close to the front wall,

(h) means electrically connecting said conductive members with said conductive sockets,

(i) apertures in the connecting panel arranged opposite to the conductive sockets,

(j) means aligned with said conductive sockets for displacing said connection panel towards the back wall when the plug pins pass through said holes and are engaged in said conductive socket, so as to effect the junction of the said connection members and said contacts on said back wall, and

(k) said connection members and said contacts being offset in relation to the axes of the said conductive sockets.

4,283,103

ELECTRICAL CRIMP CONNECTOR

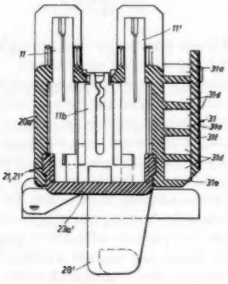
Horst Forberg; Gunter Hegner, and Anneliese Stoewe, all of Berlin, Fed. Rep. of Germany, assignors to Krone GmbH, Berlin, Fed. Rep. of Germany

Filed Jan. 24, 1979, Ser. No. 6,032

Claims priority, application Fed. Rep. of Germany, Jan. 31, 1978, 2804478

Int. Cl.³ H01R *11/00, 13/58*

U.S. Cl. 339—59 M **25 Claims**



1. An electrical crimp connector for forming a connection with an insulated wire, comprising:

an insulating member formed of a plurality of interconnected clamping elements, each of said clamping elements having a slot extending downwardly from a top surface thereof to a bottom surface thereof;

a support strip releasably secured to said bottom surface of said insulating member;

a pair of connecting elements associated with each clamping element and being joined by a transverse web, each of said containing elements being flat, strip-like and resilient and being formed of an electrically conductive material, each of said connecting elements having a slot centrally disposed thereof, each of said slots having a lower portion with a width less than the diameter of an insulated wire and an entry portion having a width greater than the width of the lower portion, said lower portion of said slot having sharp edges along the sides thereof for severing insulation on said insulated wire and contacting the core of said insulated wire for gripping thereof as said insulated wire is inserted into said lower portion of said slot, each of said pairs of connecting elements being insertable into an enclosure formed in an associated clamping element;

a multipin connector disposed on said support strip and adapted to receive connecting elements of different configurations, each of said pairs of connecting elements being pluggable into said multipin connector;

a wire guide disposed on said insulating member; and

a wire guide disposed on said support strip independently of said insulating member wire guide.

4,283,104

ELECTRICAL TERMINAL ASSEMBLY

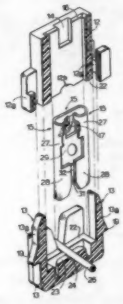
Donald S. Pemberton, Stoke-on-Trent, England, assignor to Lucas Industries Limited, Birmingham, England

Filed May 25, 1979, Ser. No. 42,537

Claims priority, application United Kingdom, May 26, 1978, 23447/78

Int. Cl.³ H01R *13/40, 13/58*

U.S. Cl. 339—97 R **10 Claims**



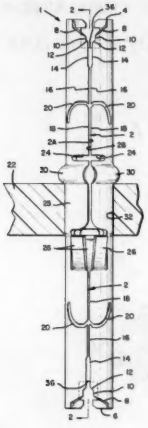
1. A terminal assembly for releasably connecting a branch lead to a through lead without disturbing the continuity of the through lead, the terminal assembly comprising an insulating housing assembly, having first and second housing parts releasably interlockable to close the housing assembly, and a conductive terminal member contained within the closed housing assembly, the terminal member being elongated and of unitary sheet metal construction and having at opposite ends first and second terminal portions, the first terminal portion defining contact means for releasable engagement in use by a complementary mating terminal of the branch lead and the first terminal portion and the first housing part having means interengageable to retain the terminal member captive within the first housing part with at least part of the second terminal portion protruding therefrom, the second terminal portion being of open-ended generally tubular shape and having side walls extending from opposite edges of a base wall and turned in towards one another but so as to leave a gap between confronting edges thereof and an open-ended slot aligned with said gap being formed in said base wall, said gap and said slot being of similar width and at the end of said second portion of the terminal member being outwardly flared, the second housing part being shaped as a cap adapted to cover said protruding part of the second terminal portion in the closed housing assembly and having a projection shaped to enter the open end of the second terminal portion, and through-lead locating means for receiving a through lead laid across the second housing part when the latter is disengaged from the first housing part and locating said through lead over said projection and in line with said gap and said slot of said second terminal portion, said second housing part having spaced walls embracing said first housing part in the closed housing assembly, said through-lead locating means comprising, at least in part, open ended notches in said spaced walls, which, in the closed housing assembly align with said gap and said slot in said second terminal portion, the entry of said projection into said open end of said second terminal portion forcing said through lead into said gap and said slot as said housing parts are interengaged, and said second terminal portion being arranged to automatically pierce the insulating sheath of said through lead if necessary and to contact the conductive core of said through lead.

4,283,105

TERMINAL FOR CROSS CONNECT APPARATUS

Jess B. Ferrill, Greensboro; Richard L. Hughes, Clemmens, and Melvin A. Soderstrom, Advance, all of N.C., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Dec. 7, 1979, Ser. No. 101,373
Int. Cl.³ H01R *4/24*
U.S. Cl. 339—97 R **5 Claims**



1. An electrical terminal comprised of a single blank of tubular sleeve form having a wire receiving, longitudinal open seam intersected by at least one slot transversely of said sleeve form and defining tandem pairs of wiring gripping jaws on opposite sides of said seam,

said seam further including tandem seam sections each of narrower width than the previous section,

a first said section having a progressively converging width initially greater than the width of an insulated wire inserted in said first section,

a second said section having a width equal to the midrange diameter of a conductor portion of said insulated wire selected from a range of insulated wire diameters,

a third said section having a width less than the width of said second section,

a fourth said section having a width less than the width of said conductor portion of said insulated wire, said terminal having a first pair of resilient wire engaging jaws at said fourth section,

said seam providing a second pair of resilient wire engaging jaws, spaced apart across a width of said seam which is less than the width of said conductor portion of said insulated wire, said second pair of said jaws being separated from said fourth section by said slot, and

metal edge surfaces at each of said first, second and third sections on opposite sides of said seam, and selectively oriented at an angle with respect to the axis of said slot to provide slicing of an insulated portion of said insulated wire and indentation flattening of said conductor portion without cutting the same.

4,283,106

SYMMETRICAL CONNECTOR FOR SOLAR PANEL ARRAYS

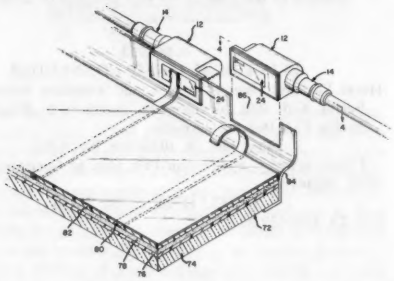
Edward D. Bunnell, Palm Harbor, Fla., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Feb. 1, 1980, Ser. No. 117,748
Int. Cl.³ H02B *1/04, 1/12*
U.S. Cl. 339—125 R **9 Claims**

1. An electrical connector capable of being mounted in a panel with any of a variety of orientations, said connector comprising:

a receptacle member formed by an elongated body of insulation material defining a planar surface, a profiled bore extending parallel to and spaced from the planar surface, a peripheral groove formed in said member intermediate said bore and said surface and a slot interconnecting said surface with said bore;

a first terminal having a trunk portion, a blade portion extending at a right angle from said trunk portion and a solder tab extending symmetrically with respect to said trunk and at right angles to the plane formed by said blade and said trunk, said first terminal being mounted in said receptacle member with said blade portion lying in said



bore, said trunk portion passing through said slot and said solder tab lying adjacent said surface,

a plug member formed by an elongated body of insulation material matable within the bore of said receptacle member and including an axial bore, sealing means adapted to make wiping engagement with said bore of said receptacle member, a peripheral recess in a rear portion, and a crimp ring mounted in said recess; and

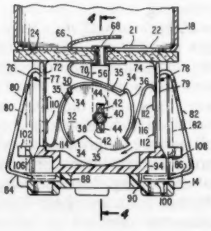
a second terminal adapted to be crimp therefor to a conductor passed into the bore of said plug member, said terminal having a mating portion adapted to engage said blade of said first terminal, said second terminal being held in said plug member by crimping of said crimp ring which forms an environmentally tight seal about said conductor as well as a strain relief therefore.

4,283,107

LAMPHOLDER HAVING TERMINALS OF THE INSULATION-DISPLAYING TYPE

Walter Anthony, Pine Beach, N.J., assignor to GTE Sylvania Wiring Devices Inc., Trenton, N.J.

Filed Aug. 2, 1979, Ser. No. 63,215
Int. Cl.³ H01R *11/20, 13/639*
U.S. Cl. 339—147 R **15 Claims**



1. In a lampholder of the type intended for connection to at least two insulated wire conductors and comprising an electrically insulating body having at least two wireways for receiv-

ing the respective conductors, and means on the body for supportably engaging and making the electrical contact with an electric lamp, the improvement comprising:

(a) connector means of the insulation-displacing type, in the form of elongated members formed of a flat electrically conductive metal material, mounted upon the body adjacent the respective wireways and disposed in electrical contact with said lamp-engaging means, said connector means being adapted for displacing the insulation of the wire conductors to provide an electrical connection between the lamp-engaging means and the respective connectors and being mounted upon the body for swinging movement between retracted positions in which they clear their associated wireways to permit insertion of the conductors therein, and insulation-displacing positions in which they extend into the wireways and displace the insulation of said conductors to effect an electrical connection between the conductors and the respective connector means; and

(b) means restraining the connector means against retrograde movement from the insulation-displacing to the retracted positions thereof, comprising, for each connector means, at least one resiliently yieldable latch element on the body releasably engaging its associated connector means in response to swinging movement of the connector means to its insulation-displacing position.

4,283,108

CONTACT BLOCK WITH RESILIENT SOCKET CONTACTS

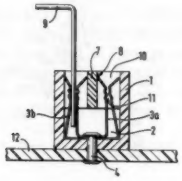
Artur Fischer, Weinhalde 34, D-7244 Waldachtal 3, Tumlingen, Fed. Rep. of Germany

Filed Sep. 19, 1979, Ser. No. 77,089

Claims priority, application Fed. Rep. of Germany, Sep. 22, 1978, 2841234

Int. Cl.³ H01R *9/24*

U.S. Cl. 339—198 K **12 Claims**



1. A contact block of an experimental construction kit for connecting electrical and electronic construction elements, comprising a support element; a plurality of contact units supported by said support element and each composed of two U-shaped contact strips inserted in one another, said strips having base portions connected with one another so as to form a common base, and each of said strips having two lateral portions extending from the base portion of the respective strip, each of said lateral portions having a free end spaced from the base portion and being provided with a slot extending from the free end of the respective lateral portion in the direction toward the base portion of the same strip and over at least a part of the length of the respective lateral portion, so that each of said lateral portions is subdivided into two resilient tongues and thereby each of said contact units comprises eight tongues which form four contacts each composed of two of said eight tongues and arranged to receive a conductor therein; and means for electrically separating said contacts from each other.

4,283,109

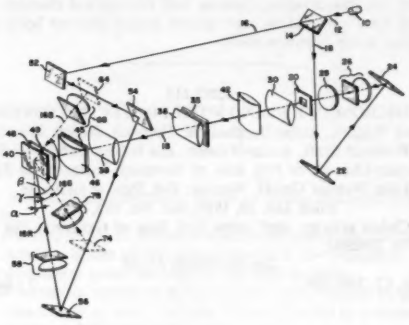
METHOD AND APPARATUS FOR MAKING WIDE EXIT PUPIL VIEWABLE HOLOGRAMS

Lloyd Huff, 439 Walsingham Ct., Dayton, OhioIO 45429, and Richard L. Fusek, 832 Cliffside Dr., New Carlisle, Ohio 45344

Filed Apr. 10, 1978, Ser. No. 895,121

Int. Cl.³ G03H *1/30, 1/22*

U.S. Cl. 350—3.76 **37 Claims**



19. Apparatus for recording a holographic image of an object on photosensitive medium including:

means for generating a coherent beam of light;

means for splitting said beam of light into a reference beam and an image beam;

means for directing said image beam toward the object to be recorded;

a diffuse screen;

means for focusing the image of said object in both the vertical and the horizontal planes onto said diffuse screen;

means for focusing the image on said diffuse screen in said vertical plane onto or near the plane of said medium while the light from said diffuse screen in the horizontal plane is incident on said medium without being focused thereon; and

means for simultaneously directing said reference beam onto said medium at a predetermined angle in the vertical plane.

4,283,110

OPTICAL SYSTEM FOR DISCUSSION-MICROSCOPE

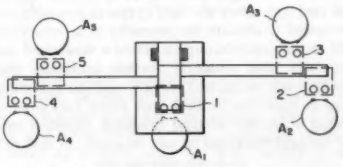
Ken Yonekubo, Hachiouji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Mar. 24, 1980, Ser. No. 133,359

Claims priority, application Japan, Mar. 30, 1979, 54-37972

Int. Cl.³ G02B *21/18*

U.S. Cl. 350—33 **6 Claims**



1. An optical system for a discussion-microscope comprising a first ray flux dividing element for dividing a ray flux through an objective lens from an object into a first ray flux passing along the optical axis of the said objective lens and a second ray flux passing in a direction different from the said optical axis, a first optical element for directing the said second ray flux to approximately the same direction as the said first ray

flux, a second ray flux dividing element designed for further dividing the said second ray flux and disposed in the passage of the said second ray flux, a second optical element for directing a third ray flux divided by the said second ray flux dividing element to approximately the same direction as the said first ray flux, and at least one relay lens disposed in the passage of the ray flux directed by the said first ray flux dividing element to a direction different from the optical axis of the said first ray flux, and the said second ray flux dividing element, the said first ray flux dividing element, said first optical element, the said relay lens and the said second optical element being disposed in the common plane.

4,283,111

MICROSCOPE STAND WITH PROTECTED TURRET

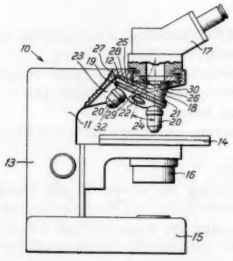
Karl Wieber, Asslar-Berghausen; Heinrich Janke, Braunfels; Winfried Kraft, Asslar-Werdorf, and Robert Lisfeld, Greifenstein-Ulm, all of Fed. Rep. of Germany, assignors to Ernst Leitz Wetzlar GmbH, Wetzlar, Fed. Rep. of Germany

Filed Jan. 28, 1980, Ser. No. 115,723

Claims priority, application Fed. Rep. of Germany, Jan. 26, 1979, 2902962

Int. Cl.³ G02B *21/24*

U.S. Cl. 350—39 **7 Claims**



1. A microscope including an eyepiece assembly, a rotatable lens turret, at least one objective lens mounted on said lens turret, said microscope further including a microscope stand, said stand having front and rear portions including an eyepiece and lens turret mounting structure, said structure extending generally horizontally in a direction from the rear portion of said stand towards the front portion of said stand, said stand including means defining a recess in a lower surface of said structure, said recess extending towards an upper surface of said structure, said recess defining a recessed surface, said eyepiece assembly mounted on said upper surface and said lens turret rotatably mounted on said recessed surface, said recessed surface recessed from a lower surface of said structure and at an angle with the horizontal, said recessed surface slopes downwardly away from said rear portion of said stand, said recessed surface being sufficiently close to said upper surface such that said lens turret and said eyepiece assembly are operatively mounted to obviate the necessity of an intervening tube lens, said recess contributing to define a weakened portion of said structure, said structure further including means for strengthening said weakened portion, said strengthening means comprises at least one vertical web along said structure, said web having a greater vertical thickness adjacent said recess than the vertical thickness of said structure in said recess.

4,283,112

TELESCOPE GUIDING SYSTEM

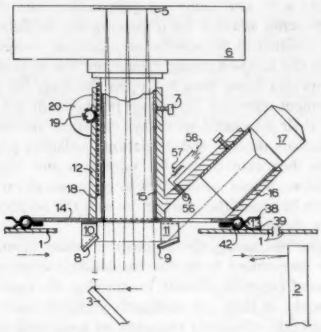
Thomas C. Venable, 716 Hastings St., Pittsburgh, Pa. 15206

Filed Apr. 24, 1979, Ser. No. 32,865

Int. Cl.³ G02B *23/04*

U.S. Cl. 350—80 **10 Claims**

1. Guide apparatus for a reflecting telescope having a main focusing tube opening out of the wall of the telescope barrel transversely thereof, first light diverting means positioned in the telescope barrel to divert light into the main focusing tube, a separate guide focusing tube opening out of the wall of the telescope barrel and second light diverting means positioned adjoining the barrel end of the main focusing tube to divert peripheral light from the first light diverting means into the



guide focusing tube, comprising a turntable having a stationary member affixed to the exterior of the telescope barrel by longitudinally extending supporting members spaced from each other transversely of the telescope barrel to straddle the telescope barrel and a rotatable member carrying the main focusing tube, the guide focusing tube and the second light diverting means.

4,283,113

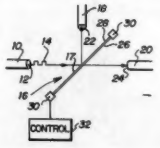
OPTICAL MODULATION WITH VANADIUM OXIDE THIN FILMS

Dayton D. Eden, 6827 Meadow Creek, Dallas, Tex. 75240

Filed Mar. 23, 1979, Ser. No. 23,221

Int. Cl.³ G02B *5/14*; G01C *3/08*

U.S. Cl. 350—96.15 **11 Claims**



1. A substantially lossless switch for switching a light signal between optical fibers comprising:

an input optical fiber carrying a modulated light signal having a wavelength above the absorption edge of vanadium oxide;

a vanadium oxide thin film disposed in the path of the light signal, said film being switchable between its semiconductor and metal state and transmitting substantially all of the light signal incident thereon when said film is in its semiconductor state and reflecting substantially all of the light signal incident thereon when said film is switched to its metal state;

first and second output optical fibers for selectively receiving light from said input fiber, said first output fiber oriented relative to said film and also to said input fiber such that a light signal from said input fiber incident on said film in its semiconductor state is transmitted through said film into said first output fiber, said second output fiber oriented relative to said film and also to said input fiber

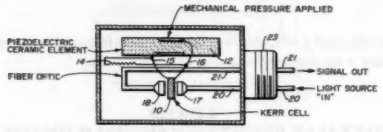
such that light incident on said film in its metal state is substantially reflected into said second output fiber; and control means for selectively heating or cooling said film above or below its transition temperature to switch said film between its semiconductor and metal states.

4,283,114

FIBER OPTIC LIGHT VALVE

Joseph Wandrack, Groton, Conn., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 11, 1980, Ser. No. 139,315
Int. Cl.³ G02B *5/14*
U.S. Cl. 350—96.20 **9 Claims**



1. A self-powered limit switch for sensing mechanical motion or displacement, comprising:

a. a sensing element means which responds to pressure to generate an electrical signal;

b. a Kerr cell means containing a normally opaque fluid that is operable to become transparent in an electrical field;

c. said sensing element means being electrically connected to said Kerr cell means wherein electrical signals from said sensing element means will render said Kerr cell means transparent to light;

d. a light source means;

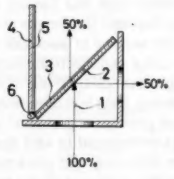
e. fiber optic means for transmitting light from each light source means to said Kerr cell means and fiber optic means for transmitting light passing through said Kerr cell means back to said light source means.

4,283,115

BEAM SPLITTERS FOR ENDOSCOPES COMPRISING A DUAL OBSERVATION SYSTEM

Klaus Fraissl, Forst, Fed. Rep. of Germany, assignor to Richard Wolf GmbH, Knittlengen, Fed. Rep. of Germany

Filed Jul. 5, 1979, Ser. No. 54,668
Claims priority, application Fed. Rep. of Germany, Jun. 28, 1978, 7822629
Int. Cl.³ G02B *27/14*
U.S. Cl. 350—171 **5 Claims**



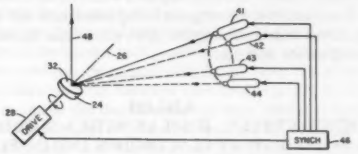
1. In an endoscope of the kind comprising a dual observation system whereby the image may optionally be adjusted for different proportions of the light intensity for the observer and the joint observer or a film or television camera by means of the optical system of the endoscope, a beam splitter comprising two thin glass plates each having a partial reflective coating, at least one of said plates being shiftable to bring its partial reflective coating in confrontation to an angled position in the beam path of the endoscope.

4,283,116

BEAM COMBINER

John A. Weis, Kennewick, Wash., assignor to Jersey Nuclear-Avco Isotopes, Inc., Bellevue, Wash.

Continuation of Ser. No. 790,017, Apr. 22, 1977, abandoned.
This application May 2, 1979, Ser. No. 35,223
Int. Cl.³ G02B *27/14*
U.S. Cl. 350—174 **37 Claims**



1. A system for combining beams of pulsed radiation comprising:

a plurality of pulsed radiation sources for providing spatially separate beams of radiation pulses in a time sequence;

the radiation pulses having a finite time duration;

the beams of radiation being inclined with respect to and distributed around a central axis so as to lie in a conical surface whose axis is the central axis;

each of said beams of radiation being inclined from said axis by a predetermined angle which is a small fraction of a radian;

means for receiving the sequence of spatially separate beams of radiation pulses at substantially their point of intersection with said central axis to deflect the separate beams of radiation pulses onto a common path over said finite time duration;

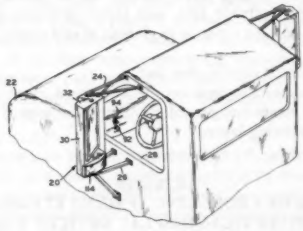
said central axis and said common path being inclined to and therefor separate from each other.

4,283,117

SIDE VIEW MIRROR APPARATUS FOR VEHICLES

Harold G. Ellis, 4126 Hampton Ave., Fort Wayne, Ind. 46808

Filed Dec. 10, 1979, Ser. No. 101,721
Int. Cl.³ B60R *1/06*; G02B *5/12*
U.S. Cl. 350—289 **8 Claims**



1. A side-view mirror apparatus for vehicles comprising a supporting frame having three vertically spaced horizontally extending mounting members, an upright mirror assembly carried by and between two of said mounting members for rotation about an upright axis, the third mounting member being beneath the lower of said two mounting members, said two lower members having two bushings, respectively, a vertically arranged hollow shaft secured at its upper end to said mirror assembly is journaled for rotation in said two bushings; said mirror assembly including two generally parallel back-to-back mirrors having sandwiched therebetween a planar arranged electrical heating element, an elongated electrical conductor received by the hollow portion of said shaft and connected at one of its two ends to said heating element, said

conductor being insulated from said shaft, and means connected to said shaft for rotatably adjusting said mirror assembly; said means for adjusting said mirror assembly including an electric motor carried by said frame between said two lower mounting members and a worm and wheel drive connected between said motor and said shaft; said frame being in the form of a three sided housing enclosing said mirror assembly, and including a convex mirror mounted on said housing beneath said mirror assembly and juxtaposed with respect to said motor and drive, and said housing enclosing said motor and drive and said convex mirror closing the open side of said housing opposite said motor and drive.

4,283,118

LIQUID CRYSTAL DISPLAY WITH A SUBSTRATE CARRYING DISPLAY ELECTRODES AND INTEGRATED CIRCUIT CHIP CONNECTED THERETO

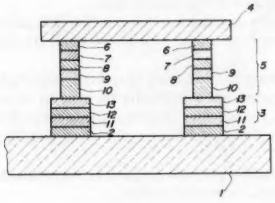
Yukihiro Inoue, Kashihara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 879,392, Feb. 21, 1978, abandoned. This application Jul. 10, 1980, Ser. No. 168,249

Claims priority, application Japan, Feb. 22, 1977, 52-21659

Int. Cl.³ G02F *1/133*

U.S. Cl. 350—334 **4 Claims**



1. A liquid crystal display comprising:

a glass substrate;

a liquid crystal display formed on the glass substrate;

a display electrode film provided for the liquid crystal display;

multiple soldering layers formed on an extension of the display electrode film, said layers including Cr, Cr-Au alloy, and Au seriatum beginning at said display electrode film;

an integrated circuit chip; and

bump means disposed on the integrated circuit chip, the bump means being bonded with the Au layer of said multiple soldering layers.

4,283,119

METHOD OF PRODUCING SPACING ELEMENTS FOR ELECTRO-OPTICAL DISPLAY DEVICES AND SUCH DISPLAY DEVICES

Horst Hofmann, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

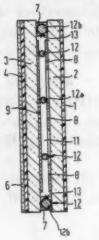
Filed Sep. 13, 1979, Ser. No. 74,991

Claims priority, application Fed. Rep. of Germany, Sep. 22, 1978, 2841435

Int. Cl.³ G02F *1/133*

U.S. Cl. 350—344 **9 Claims**

1. In an indicia display device such as a liquid crystal cell having two plates spaced from one another via at least two spacing elements, the improvement comprising wherein said spacing elements are composed of a metal core enveloped by a layer of a brittle metallic compound, said metal core and layer of brittle metallic compound having identical metal atoms which are selected from the fourth through the sixth adjacent groups of the Periodic Chart of the Atoms and said compound being selected from the group consisting of a carbide, a boride,



a nitride, and a silicide; said layer of brittle metallic compound having a maximum thickness of about 3 μm.

4,283,120

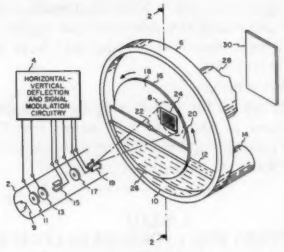
LIGHT VALVE PROJECTION SYSTEM WITH OFF AXIS RASTER ORIENTATION

David A. Orser, Liverpool; Howard E. Towlson, Baldwinsville, and Thomas T. True, Camillus, all of N.Y., assignors to General Electric Company, Portsmouth, Va.

Filed Dec. 11, 1978, Ser. No. 968,270

Int. Cl.³ G02F *1/29*

U.S. Cl. 350—361 **2 Claims**



1. Light valve projection apparatus including electron beam means forming a raster of orthogonally related diffraction gratings on a light modulating fluid to diffract incident light for projection onto a viewing surface, comprising:

a housing providing a sump for said fluid,

a disk rotatably mounted within said housing so as to rotate about its center, said disk having a portion immersed in said sump so that said fluid coats the nonimmersed portion of at least one surface of said disk upon rotation thereof,

means for directing said electron beam means to form on the fluid coating of said disk a raster of deposited charge along parallel scanning lines in a first direction to form a first set of diffraction gratings and at least a second set of diffraction gratings orthogonal to said first set,

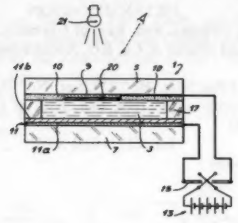
said means for directing said electron beam means causing said raster to be positioned on the nonimmersed portion of said disk between the offset from horizontal and vertical coordinate axes in the plane of said disk, said coordinate axes intersecting at the rotational center of said disk so as to divide said nonimmersed portion into first and second quadrants, said first set of diffraction gratings being substantially parallel to said horizontal coordinate axis,

whereby the concentric generally circular paths traced by elemental portions of said fluid as said disk rotates intersect each of said sets of diffraction gratings and are not tangent to any of said sets of diffraction gratings.

4,283,121
ELECTROLYTIC DISPLAY CELLS WITH A METAL DEPOSIT

Robert Meyer, Saint Ismier, France, assignor to Commissariat l'Energie, Paris, France

Filed Jun. 22, 1979, Ser. No. 51,031
Claims priority, application France, Jun. 30, 1978, 78 19621
Int. Cl.³ G02F *1/29*
U.S. Cl. 350—363 **8 Claims**

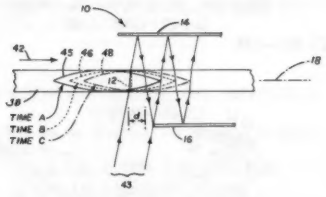


1. An electrolytic display cell comprising a transparent electrode of a shape suitable for display purposes, a counter-electrode of greater surface area oppositely disposed with respect to said transparent electrode and comprising a supporting member having deposited thereon a first continuous layer of an electrically conductive metal chemically and electrochemically inert with respect to an electrolyte to be used in the cell under the operating conditions thereof, and an outer continuous layer of a primary metal to be deposited on said transparent electrode and in contact with said electrolyte; an electrolyte disposed between said electrodes to facilitate transfer of said primary metal from said counter-electrode to said transparent electrode and redeposition thereof on said counter-electrode; and means for supplying said electrodes with power to deposit on or dissolve from preselected parts of said transparent electrode a coating of said primary metal.

4,283,122
LIGHT-BEAM STREAKING EMPLOYING CRYSTAL WITH TRAVELING LENS AND MULTIPLE CROSS-CRYSTAL REFLECTIONS

Richard A. Elliott, Beaverton; Gail A. Massey, Cornelius, and John B. Shaw, Aloha, all of Oreg., assignors to Oregon Graduate Center for Study and Research, Beaverton, Oreg.

Filed Oct. 29, 1979, Ser. No. 89,083
Int. Cl.³ G02F *1/29*
U.S. Cl. 350—379 **2 Claims**



1. Apparatus for streaking a beam of light comprising

an electro-optic, electromagnetic-traveling-wave lens device having an elongated lens-traveling axis, said device being adapted to be impinged on a side and toward one end of said axis by a beam of light which is intended to be streaked,

means operatively coupled to said device for producing thereadjacent, selectively, an electromagnetic wave which travels along said axis from its said one end toward the other end, thus to induce in the device a corresponding, synthesized traveling optical lens,

reflector means including at least a pair of opposed, confronting reflective surfaces, disposed on opposite sides of said device in positions capable of producing, with respect to such impinging light beam, multiple cross-reflections through the device between said ends of said axis, whereby the beam impinging said device on a side thereof and adjacent said one end of said axis emerges on a side of said device adjacent said other end of said axis,

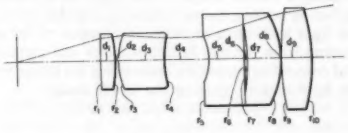
said surfaces being oriented in such a manner that each wave front in the beam which is reflected by the surfaces successively crosses the axis of said device with a uniform displacement in time, between each crossing, which substantially equals the displacement in time, between such successive crossings, of said traveling lens in said device, and

means responsive to the beam of light which impinges said device, operatively connected to said device for coordinating in time the production thereadjacent of the traveling electromagnetic wave with impingement of the device by the beam of light.

4,283,123
MICROSCOPE OBJECTIVE

Tsutomu Tojyo, Hachiouji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 829,574, Aug. 3, 1977, abandoned. This application Aug. 28, 1979, Ser. No. 70,493
Claims priority, application Japan, Sep. 7, 1976, 51-107081
Int. Cl.³ G02B *9/60, 21/02*
U.S. Cl. 350—414 **4 Claims**



1. A microscope objective comprising a first, second, third, fourth and fifth lenses, said first lens being a positive lens, said second lens being a positive meniscus lens arranged convex toward the object side, said third lens being a negative lens, said fourth lens being a positive meniscus lens arranged concave toward the object side, said fifth lens being a biconvex lens, each of said lens components being a single lens with an air space between each pair of said lens components, and said microscope objective satisfying the following conditions:

$0.47f < r_2 < 0.49f$

$0.4f < r_8 < 0.51f$

wherein reference symbol f represents the focal length of the lens system as a whole, reference symbol r_2 represents the radius of curvature of the surface on the image side of the first lens, and reference symbol r_8 represents the radius of curvature of the surface on the image side of the fourth lens.

4,283,124
EYE FUNDUS CAMERA

Isao Matsumura, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 587,661, Jun. 17, 1975, abandoned. This application Sep. 26, 1978, Ser. No. 945,845
Claims priority, application Japan, Jun. 19, 1974, 49/69949
Int. Cl.³ A61B *3/10*
U.S. Cl. 351—7 **30 Claims**

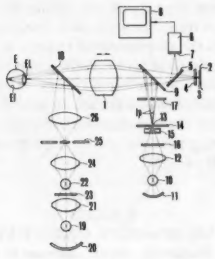
1. An eye fundus camera, comprising:

an optical system including plane means defining a recording plane, optical means between the eye to be inspected and the recording plane for forming an image of the eye fundus of the eye to be inspected on the recording plane;

illuminating means for illuminating the fundus of the eye to be inspected with light ineffective to cause contraction of the pupil of the eye;

mark means for defining a mark having a predetermined shape;

projecting means holding the mark means and forming a light beam ineffective to cause contraction of the pupil of the eye to be inspected for projecting an image of the mark, said optical means being arranged relative to said projecting means for forming the image of the mark on the eye fundus;



focusing means coupled to said optical system and projecting means for simultaneously adjusting the focus of the image of the eye fundus on the recording plane and the focus of the image of the mark upon the eye fundus; and

display means optically coupled with said optical system for forming a visible image of the mark, said display means including sensing means defining a sensing plane for sensing light ineffective to cause contraction of the pupil and coming from the eye fundus through said optical means, and converting means for converting the image formed on the light sensing plane into a visible image.

4,283,125

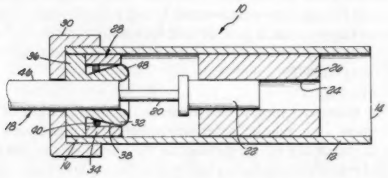
FIBER OPTIC CONNECTOR

Leslie M. Borsuk, Los Alamitos, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Jul. 2, 1979, Ser. No. 53,732

Int. Cl.³ G02B *5/14;* H01R *4/28*

U.S. Cl. 350—96.20 **5 Claims**



1. A connector terminated to a fiber optic cable having a strength member and at least one optical fiber therein comprising:

a connector body having a front mating end and a rear, said cable extending into said rear of said body;

fiber optic cable strength member termination means adjacent said rear of said connector body;

said termination means comprising inner and outer sleeves having opposed, angular and generally cylindrical surfaces and a clamping ring therebetween engaging one of said surfaces;

said angular surface extending at an angle longitudinally relative to said cylindrical surface with said angle opening rearwardly;

said cable extending forwardly through said inner sleeve with its strength member folded back over the forward end of said inner sleeve and extending rearwardly between the other of said surfaces and said clamping ring, whereby a rearwardly directed axial load on said cable will cause said ring to shift forwardly thereby tightly clamping said strength member.

4,283,126

METHOD AND APPARATUS FOR EYE REFRACTION DETERMINATION

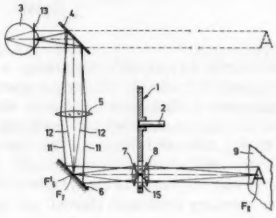
Josef Reiner, Cologne, Fed. Rep. of Germany, assignor to Herbert Schwind GmbH & Co. KG, Aschaffenburg, Fed. Rep. of Germany

Filed Mar. 30, 1979, Ser. No. 25,643

Claims priority, application Fed. Rep. of Germany, Apr. 7, 1978, 2815120

Int. Cl.³ A61B *3/02*

U.S. Cl. 351—30 **8 Claims**



1. A method for determining eye refraction using corrective lenses which method comprises spacing the corrective lens at a distance from the eye to be examined and projecting an image of the corrective lens into the pupil of the eye or at a predetermined spaced relation in front of said pupil by positioning at least one optical element including a beam splitter mirror in the light path between the corrective lens and the eye to be examined with the corrective lens positioned out of the line of vision of the eye to be examined to simulate the positioning of the corrective lens at the selected one of into or in front of the pupil and to simulate vision in free space by the eye to be examined of an optotype imaged on the corrective lens.

4,283,127

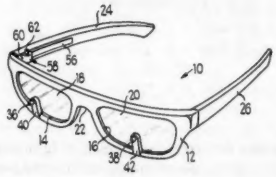
NOVELTY EYEGLASSES

Donald A. Rosenwinkel, Tinley Park, and Harry Disko, S. Barrington, both of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Nov. 29, 1979, Ser. No. 98,551

Int. Cl.³ G02C *3/00*

U.S. Cl. 351—158 **14 Claims**



1. A pair of eyeglasses comprising:

a frame;

a pair of lens apertures in said frame;

a pair of earpieces secured to said frame; and

means for emitting light mounted on said frame, said light

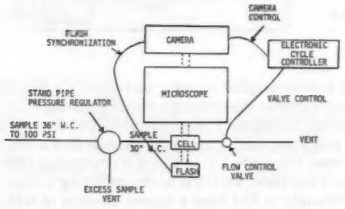
emitting means including an extension of said frame extending into said lens apertures and a light emitting device in each said extension at a location relative to each of said lens apertures to simulate light being emitted from approximately the cornea of the eyes of the user of said eyeglasses.

4,283,128

PHOTOMICROGRAPHIC SYSTEM FOR FLOWING FLUIDS

Raymond A. Meyer, Newbury Park, Calif., and Frank J. Freestone, Edison, N.J., assignors to The United States of America as represented by the Administrator of the U.S. Environmental Protection Agency, Washington, D.C.

Filed Jun. 23, 1980, Ser. No. 161,990
Int. Cl.[3] G01T *1/167;* G03B *17/48*
U.S. Cl. 354—79 **10 Claims**



1. A photomicrographic system for measuring the number, size distribution, and movement rate of foreign matter entities in a flowing liquid stream, comprising:

a microscope having a field of view and an optical axis, along which lie an objective lens and a viewing lens, said microscope being disposed such that the plane of its optical axis is horizontal;

a liquid sample cell disposed within the field of view of said microscope;

a solenoid valve located downstream of said sample cell and connected thereto, whereby the liquid flow through the cell may be stopped or started;

a standpipe pressure regulator fed by the flowing liquid stream and connected at its low pressure side to said sample cell, whereby a steadily flowing sample stream at essentially constant pressure is provided at the entrance of the sample cell;

a flash illuminator disposed such that a flash therefrom illuminates said sample cell; and

a camera disposed such that the image of said cell formed at the viewing lens of said microscope forms the film image of said camera, the latter being provided with a motor driven film winder.

4,283,129

CAMERA FOR RECORDING THE OUTPUT OF AN INSTRUMENT

Edward T. Bennick, Jr., Fairfax, Va., assignor to Quality Craft, Inc., Fairfax, Va.

Filed Aug. 3, 1979, Ser. No. 63,595
Int. Cl.[3] G03B *29/00*
U.S. Cl. 354—81 **34 Claims**

1. A camera to be mounted adjacent a cathode ray tube device having a cathode ray tube therein to record an image from a screen of the cathode ray tube, the camera comprising:

a generally rectangular film cassette having sheets of rectangular film therein to be exposed, said film cassette having four lateral edges and a pair of oppositely facing sides;

an enclosure having an interior and an exterior, said enclosure also having first and second openings to said exterior of said enclosure, said first opening being at least as large in area as the screen of the cathode ray tube, said second opening being at least as large in area as the area of said film to be exposed;

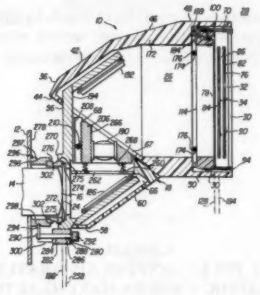
a lens in said enclosure, said lens being disposed between said first and second openings in said enclosure;

means, in the region of said first opening, for mounting said enclosure adjacent the cathode ray tube device and in surrounding relationship with the screen thereof;

means for removably positioning said film cassette adjacent said second opening, said film cassette being removably positioned in a working position across said second opening such that a major portion thereof serves as a closure for closing said second opening between the interior and exterior of the enclosure; said positioning means including:

a stationary holder extending from said enclosure for holding at least one part of said film cassette with respect to said second opening;

movable attaching means including a movable latch, said movable attaching means being coupled with said enclosure and disclosed for engagement of said movable latch with a part of said cassette other than said one part which is engaged by said holder, said latch having a portion extending outwardly with respect to said enclosure and a catch portion on said outwardly extending portion, said latch being movable between a latched position engaging said cassette and an unlatched position out of engagement with said cassette, thus permitting removal of said cassette from its working position covering said second opening, said movable attaching means including means for biasing said latch into said latched position and means for both holding said latch in said unlatched position after manual movement of said latch into said unlatched position and also for automatically releasing said latch from said unlatched position upon movement of said film cassette into the working position to thereby allow movement of said latch into said latched position and thus into gripping engagement with said film cassette.



4,283,130

SEQUENCING CAMERA

John R. Lawson, 277 Baker Ave., West Concord, Mass. 01781

Filed Feb. 8, 1980, Ser. No. 119,819
Int. Cl.[3] G03B *1/00*
U.S. Cl. 354—120 **17 Claims**

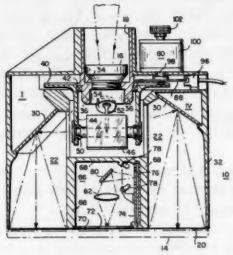
1. A camera for focusing an array of images on a single focal plane at two or more radial distances from the optical axis of a focal light path, said camera comprising:

a lens arrangement adapted to receive light and direct it into the focal light path in said camera;

first mirror means arranged to rotate and tilt, said first mirror means being disposed in the focal light path from said lens; and

second mirror means mounted in communication with said

first mirror means and arranged to direct light from said first mirror means to at least two locations on said focal plane, said locations being displaced from each other in radial disposition from the optical axis of said lens; and



means to maintain a constant focal length by tilting said first mirror means and disposing said second mirror means to accommodate variations in radial positioning of said array of images.

4,283,131

MANUAL FOCUS SETTING APPARATUS FOR PHOTOGRAPHIC CAMERA HAVING AUTOMATIC FOCUS ADJUSTING MECHANISM

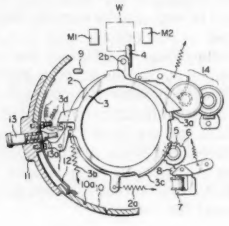
Mitsuo Ohnuki, and Masashi Yamada, both of Hachioji, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Apr. 11, 1979, Ser. No. 29,035

Claims priority, application Japan, Apr. 12, 1978, 53-47024[U]

Int. Cl.³ G03B *3/00*

U.S. Cl. 354—195 **3 Claims**



1. In a photographic camera of the type having an automatic focus adjusting mechanism, an actuator member adapted to move simultaneously or in synchronism with movement of a focusing lens along its optical axis, an electromagnet operable in response to a signal from a ranging device to stop movement of said actuator member and said focusing lens; the improvement which comprises a stopper projection on said actuator member, a focus setting member manually movable from a position clear of the path of movement of said stopper projection to a position adapted to engage said stopper projection to limit movement of said actuator member, and switch means operable in response to movement of said focus setting member to the stopper projection engaging position to inhibit operation of said electromagnet.

4,283,132

PHOTOGRAPHIC CAMERA

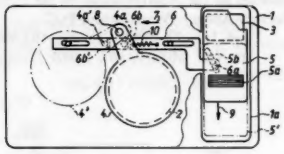
Dieter Engelsmann, Unterhaching; Peter Lermann, Naring; Reinhard Nicko, Munich; Herbert Schultes, Munich, and Karl Wagner, Munich, all of Fed. Rep. of Germany, assignors to Agfa-Gevaert AG, Leverkusen, Fed. Rep. of Germany

Filed Jan. 30, 1980, Ser. No. 116,804

Claims priority, application Fed. Rep. of Germany, Feb. 7, 1979, 2904473

Int. Cl.³ G03B *17/00, 17/04*

U.S. Cl. 354—202 **13 Claims**



1. In a photographic camera, particularly a miniature camera, a combination comprising a housing having a front wall; a view finder having an inlet window at said front wall; a lens also at said front wall; a manually slidable first cover movable to and from a first position in which it covers said inlet window to protect the same, said first cover including a cam; a second cover movable to and from a second position in which it covers said lens to protect the same; and means linking said covers for joint movement to and from said positions in response to manual sliding of said first cover to and from said first position thereof, said means including a slide cooperating with and tracking said cam and being operatively connected with said second cover.

4,283,133

LARGE APERTURE RATIO INTERCHANGEABLE LENS FOR A SINGLE LENS REFLEX CAMERA

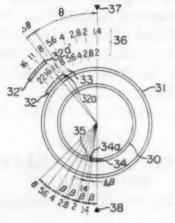
Sunao Ishizaka, Tokyo, and Toru Fukuhara, Isehara, both of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed Sep. 11, 1979, Ser. No. 74,485

Claims priority, application Japan, Sep. 19, 1978, 53-127515[U]

Int. Cl.³ G03B *9/02*

U.S. Cl. 354—270 **4 Claims**



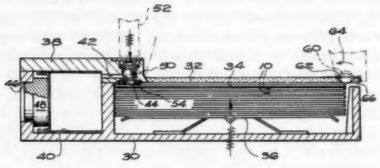
1. A large aperture ratio interchangeable lens adapted to be mounted on the camera body of a single lens reflex camera of the TTL open photometry type comprising a lens body, a preset aperture ring rotatable with respect to the lens body for varying the lens aperture between an open F-value (f_O) inherent to said lens and a desired F-value (f) by rotation of the aperture ring, a first signal member operatively associated with the aperture ring for transmitting to the camera body, by virtue of the location of the first signal member, a difference signal ($f-f_O$) corresponding to the difference between the open F-value (f_O) and the desired F-value (f) set by said aperture ring, the first signal member having a deviation from a prede-

termined position at which the position of the first signal member corresponds to the open F-value (f_O) inherent to said lens in order to compensate for the difference between the quantity of light theoretically passing through said lens and the quantity of light actually passing through the lens, and a second signal member for transmitting to the camera body, by virtue of the location of the second signal member, a signal corresponding to said open F-value (f_O), the second signal member having a deviation from a predetermined position at which the position of the second signal member indicates the open F-value (f_O) of the lens, said deviation of the second signal member being equal to the deviation of the first signal member.

4,283,134
FILM PACK

Richard L. Columbus, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 24, 1980, Ser. No. 143,229
Int. Cl.³ G03B *17/26*
U.S. Cl. 354—275 **8 Claims**



1. A film pack comprising:

a plurality of photographic film units, each of which (1) has means defining an interior enclosure, (2) is processable by a low viscosity fluid and (3) has a small access hole through which a supply of such fluid can be introduced into the enclosure of the film unit;

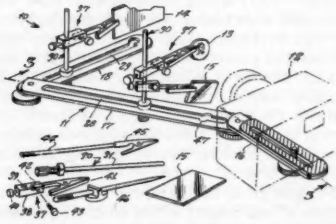
an opaque casing housing said film units and having (1) a front wall with a light-transmitting area through which the uppermost film unit can be exposed, (2) an end wall with an elongated slot through which exposed film units can be individually advanced from the casing, and (3) a small cross-sectional area opening with which the access hole of the uppermost film unit is aligned; and

a container of the low viscosity processing fluid in said casing having fluid passage means interconnecting said container and said opening for introducing processing fluid into each film unit after exposure.

4,283,135
CLOSE-UP PHOTOGRAPHY AID

Ben Lupis, 3191 Shore Rd., Oceanside, N.Y. 11572

Filed Nov. 2, 1979, Ser. No. 90,867
Int. Cl.³ G03B *17/56*
U.S. Cl. 354—293 **2 Claims**

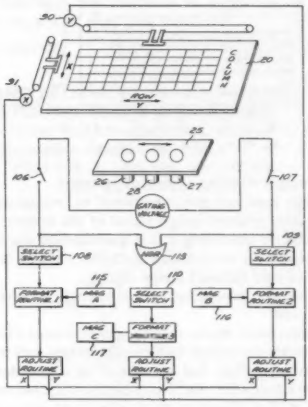


1. A close-up photography aid, comprising in combination, a frame having a plurality of elongated flat arms, a plurality of screws for pivotting together adjacent ends of said plurality of arms, each of said plurality of screws having an enlarged flat head for resting upon a supporting surface, each of said plurality of arms having an elongate slot along a portion of the length thereof, and an enlarged circular opening along said slot of two of said arms; two posts receivable through said two enlarged circular openings and each being adjustably slidable along the length of a respective one of said two arms; means for adjustably mounting said two posts to their respective arms in which they are mounted; and means affixed to said two posts for mounting thereon photographic equipment.

4,283,136
MICROFICHE READER PRINTER HAVING MULTI-FORMAT CAPABILITIES

William R. Swift, Placentia; Don W. Herrod, Walnut, and James M. Marsh, Yorba Linda, all of Calif., assignors to AM International, Inc., Los Angeles, Calif.

Filed Sep. 5, 1978, Ser. No. 939,445
Int. Cl.³ G03B *27/48*
U.S. Cl. 355—45 **21 Claims**



1. In a microfiche reader printer including a light source, a platen for holding a microfiche in the path of the light from the light source, magnifying means in the light path for receiving an image from the micro-fiche and magnifying the image, the magnifying means comprising a lens support, a plurality of lenses mounted on the lens support, a viewing screen, a copier and light directing means for alternatively directing the image from the microfiche through the magnifying means to the viewing screen where the image may be viewed or to the copier where the image may be copied, the improvement comprising;

mounting means for mounting the lens support for movement to position one of the lenses in the light path, the mounting means comprising a pair of parallel gibs, the lens support being slidably mounted between the gibs whereby sliding the lens support between the gibs positions a chosen lens in the light path;

sensing means disposed proximate to the lens support for sensing the position of the lens support and determining which lens is in the path of light, the sensing means comprising a first and a second switch, the lens support contacting the first switch when the rightmost lens is in the light path, and contacting the second switch when the leftmost lens is in the light path;

platen moving means attached to the platen for moving the platen and the microfiche on the platen into the light path for copying successively framed images of the microfiche; and

control means operatively connected to the platen moving means for controlling the platen moving means, and reading whether the lens support is contacting the first switch, the second switch or neither switch and adjusting the platen moving means for different frame-to-frame movements and for adjusting the speed at which the platen moves to scan the frame being copied to compensate for different microfiche formats.

4,283,137

IMAGE SCANNING SYSTEM

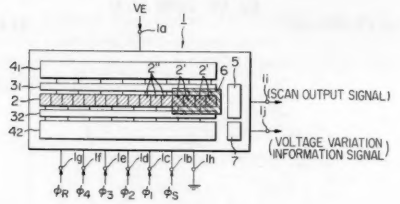
Tokuichi Tsunekawa, Yokohama; Makoto Masunaga, Tokyo; Kazuya Hosoe, Machida; Yukichi Niwa; Mitsutoshi Owada, both of Yokohama, and Noriyuki Asano, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 30, 1979, Ser. No. 25,544

Claims priority, application Japan, Mar. 31, 1978, 53/38566

Int. Cl.[3] **G01C** *3/08;* **G03B** *7/08*

U.S. Cl. 356—4 **28 Claims**



1. An image scanning system comprising:

(A) image scanning means arranged to receive an image for providing scanned image signal of the image;

(B) means for providing a first quantization standard which is variable in accordance with the change in a specific level of said scanned image signal;

(C) means for providing a fixed second quantization standard; and

(D) quantization means receiving said scanned image signal to provide quantized data on said image, said quantization means providing first quantized data by quantizing the image signal with said first quantization standard provided by said first quantization standard provision means and providing second quantized data by quantizing the image signal with said second quantization standard provided by said second quantization standard provision means.

4,283,138

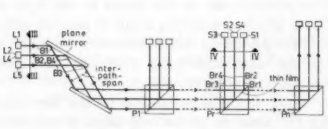
LOW-FLYING OBJECT VELOCITY-POSITION TRACING SYSTEM

So S. Lai, 16th Floor, Flat C, Brilliant Ct., 27 Chai Wan Rd., Hong Kong, Hong Kong

Filed Sep. 6, 1979, Ser. No. 72,920

Int. Cl.[3] **G01P** *3/36;* **G08B** *13/18*

U.S. Cl. 356—28 **1 Claim**



1. A set of one or more layers of electro-optical systems for locating and measuring the velocities of low-flying objects approaching or intruding the surveillance region of said set of electro-optical systems, each said electro-optical system comprising

two orthogonally oriented sequences of prism-complexes, each said prism-complex made of two right-angled-isosceles-prisms coupled at hypotenuse planes thereof by a thin film having a refractive index deviated from that of said prisms and an adjusted reflection coefficient, each said prism-complex accompanied remotely horizontally side-by-side by

a light-sensor-quadruplet, thereby each of said two orthogonally oriented prism-complex sequences is accompanied by a dual-in-line light-sensor-quadruplet sequence, each said light-sensor-quadruplet being an erect rhombic configuration of four light sensors, each said prism-complex sequence accompanied by

an erect rhombic configuration of four lasers emitting therefrom four parallel horizontal laser beams forming a beam-quadruplet having the axis thereof normal to the plane of said erect rhombic configuration of said four lasers, said laser beams being intercepted successively by said sequence of prism-complexes whereby small portions of said laser energy are reflected by said thin films to impinge corresponding said light sensors thereof, said laser beams being sufficiently fine that normal impingements thereof at said light sensors are interrupted when said laser beams are sufficiently deflected aerodynamically by said low-flying objects, thereby producing electrical output signals,

parallel pairs of planar reflecting means for directing said laser beams to follow desired ray paths whereinto are inserted said reflecting means, thereby preserving inter-path-spans within each said beam-quadruplet,

rectangular sectioned tubes having lateral apertures as outlets for said reflected laser beams and enclosing said prism-complexes and said planar reflecting means thereby shielding said beam-quadruplets,

a monostable multivibrator having the input thereof connected to a first light sensor of the horizontal pair of any one of said light-sensor-quadruplets responsive to the electrical output signal therefrom, and

a first AND gate having one input thereof connected to the inverted output Q of said monostable multivibrator and another input thereof to a second light sensor of the same pair of said first light sensor, thereby producing electrical output signals dependent of the orders of arrivals of electrical signals from said first and second light sensors,

a RS-flip-flop having a set input S thereof connected to the output of said first AND gate thereby registering the electrical output signals therefrom, thereby registering the moving directions of a said low-flying object by the output Q thereof,

a first OR gate having one input thereof connected to said first light sensor and another input thereof connected to said second light sensor responsive to the electrical output signals therefrom producing an electrical output signal,

a T-flip-flop having a trigger input T thereof connected to the output of said first OR gate responsive to the electrical output signal therefrom producing a high level at the output Q thereof for a transient period between the arrivals of said electrical output signals from said light sensors, and

a counter having a clock pulse input CP thereof connected to a first clock bus and fed by clock pulses therefrom, said counter further having a count-enable input CE thereof connected to the output Q of said T-flip-flop responsive to the high level thereof, thereby counting the clock pulses fed thereto a period inversely proportional to the velocity of a said low-flying object, said counter further having an overflow output OVF thereof connected to an input of said first OR gate to produce a high level at the output thereof to reset said T-flip-flop whenever there is an overflow of said counter, thereby ignoring sufficiently slow low-flying objects,

an AND gate group having inputs thereof connected to the outputs of said counter, a first control input thereof connected to the overflow output of said counter, a second control input thereof connected to the inverted output Q of said T-flip-flop, thereby the Count appearing at the outputs of said counter is ready to be clocked to appear at

the outputs thereof whenever there is no overflow of said counter and said counter is not counting,

a second AND gate having a first input connected to the output Q of said RS-flip-flop to gate the transfer of the sign registered thereat,

a second OR gate having inputs thereof connected to all outputs of said counter, thereby producing a high level at the output thereof whenever the Count of said counter is non-zero,

a third AND gate having an input thereof connected to the output of said second OR gate responsive to the high level signal therefrom to gate the transfer of a clock pulse fed from a second clock bus to a second input thereof, thereby having the possibility of producing a transferred pulse,

a first delay-element-group having inputs thereof connected to the outputs of said AND gate group and said second and third AND gates, said first delay-element-group further having outputs thereof respectively coupled to the data buses and sign bus and jumpered onto the address buses, thereby transferring thereto said Count, sign and transferred pulse with a delay upon the arrival of a clock pulse fed from said second clock bus, said delay being present at an integer units of time base, said integer being the counted-towards-console numbering of the particular stage of above-described electronic circuit,

a first plurality of diodes coupled between said outputs of said first delay-element-group and said data buses, sign bus and address buses to perform an OR function with respect thereto,

a second plurality of diodes cascaded into said data buses, sign bus and address buses facilitating unidirectional information flow towards said console,

a plurality of amplifiers cascaded into said data buses, sign bus and address buses compensating transmission line losses,

a plurality of repeated above-described apparatuses and couplings in connection with the remaining horizontal pairs of light sensors of said light-sensor-quadruplet sequence, and also

a plurality of identical apparatuses and couplings described afore in connection with all said vertical pairs of light sensors of said light-sensor-quadruplet sequences, the outputs of the OR gates corresponding to said second OR gate being coupled to the inputs of AND gates in said repeated apparatuses for horizontal light sensor pairs corresponding to a second input IN of said third AND gate,

said first clock bus connected to the clock pulse inputs of said counters of said plurality of apparatuses in connection with both said horizontal and vertical pairs of light sensors transmitting thereto clock pulses of a first frequency,

a first clock connected to said first clock bus feeding thereto clock pulses of said first frequency,

said second clock bus connected to a second input of said second AND gate, a third control input of said AND gate group and a third input of said third AND gate transmitting thereto clock pulses of a second frequency lower said first frequency, thereby releasing said Sign, Count and transferred pulse to reach said sign bus, data buses and address buses synchronously forming a travelling information-pulse-group, said second clock bus further connected identically to said plurality of apparatuses, thereby the information thereof being released stage by stage consecutively starting from the stage far most from said console forming an ordered information-pulse-group-sequence having the wave front thereof being the information-pulse-group generated by the stage far most from said console, duty-cycle pulse width of said clock pulses of said second frequency being sufficiently less than said time base of said first delay-element-group ensuring non-overlapping of said information-pulse-group, said second frequency tuned to an optimum facilitating non-overlapping and compactness of a train of said information-pulse-group-sequences generated by a train of said clock pulses of said second frequency, said second clock bus further coupled to the reset inputs R of the RS-flip-flops of said plurality of apparatuses and to the RESET inputs of said counters facilitating recurrent auto-reset thereto,

a second clock connected to said clock bus feeding thereto clock pulses of said second frequency,

a reset bus connected to the reset inputs of the T-flip-flops of said plurality of apparatuses for clearing the outputs thereof whenever there are errors,

a reset button connected to said reset bus for manual operations,

said data buses coupling the Count part of said outputs of said first delay-element-groups of said plurality of apparatuses to the inputs of a read-only-memory in said console,

said read-only-memory for decoding said Counts into Velocities appearing at the outputs thereof,

said sign bus coupling the Sign outputs of said first delay-element-groups to one input of a second delay-element-group in said console,

said address buses coupling the transferred-pulse-outputs of said first delay-element-groups to the remaining inputs of said second delay-element-group,

said second delay-element-group for compensating the timing of said signs and addresses to appear at the outputs thereof in parallel with said Velocities.

4,283,139

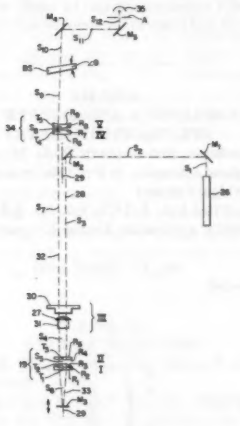
INSTRUMENT FOR OPTICALLY MEASURING SOFT CONTACT LENS PARAMETERS

C. Hermas Swope, Westborough, Mass., assignor to American Optical Corporation, Southbridge, Mass.

Filed Feb. 4, 1980, Ser. No. 118,274

Int. Cl.[3] **G01B** *9/00*

U.S. Cl. 356—125 **11 Claims**



1. An optical system having a center line for accurately measuring parameters of a soft contact lens supported on a pedestal and submerged in a liquid which comprises,

a source of collimated light,

means for directing light from said source toward one side of the lens along a first path parallel to and spaced from the center line,

first objective means for imaging light on said center line, said first objective means being selectively positionable on the center line between said means and the lens,

second objective means for imaging light on the center line, said second objective means being located on the other side of said lens,

reflection means for reflecting light received from said second objective means along a second path, a plane common

to said first path, said second path and the center line, and said center line being located between said first and second paths, a portion of said second path being parallel to said center line, and

detection means for determining when said portion is spaced from said center line the same as said first path.

4,283,140

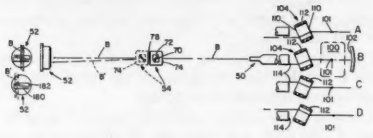
SPATIALLY HOMOGENIZING OPTICAL MODULATOR

William W. Carson, Mendon, Mass., assignor to Waters Associates, Inc., Milford, Mass.

Filed Jun. 25, 1979, Ser. No. 51,812

Int. Cl.³ G01N *21/41*

U.S. Cl. 356—130 **21 Claims**



1. In apparatus of the type including a light source directing a light beam through a measurement zone to a detector, wherein movement of said beam in a measurement direction with respect to said detector gives an indication of the measurement made in said zone, the improvement comprising:

means for modulating, through a preselected amplitude in a first modulation direction, the position of said beam with respect to said measurement zone, said amplitude being independent of light beam movements at said light source or in the path of said beam between said source and said modulating means,

whereby said measurement can be made substantially independent of said beam movements in said modulation direction.

4,283,141

SAMPLE CELL AND STIRRER FOR SPECTROPHOTOMETRY

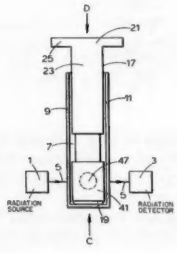
Trevor J. Stockdale, and Anthony R. L. Moss, both of Cambridge, England, assignors to Pye (Electronic Products) Limited, Cambridge, England

Filed Feb. 5, 1979, Ser. No. 9,211

Claims priority, application United Kingdom, Feb. 13, 1978, 05620/78

Int. Cl.³ G01N *1/00*

U.S. Cl. 356—246 **17 Claims**



1. A cell arrangement for spectrometric instruments comprising a sample cell positioned in a radiation path for permitting passage of radiation; a one-piece plastic stirrer positioned in a radiation transmissive region of said sample cell, said stirrer comprising: a body portion having opposed limbs extending exterior to said sample cell, said body portion including a flange at its outer end having an aperture therein to provide a path for fluid to communicate freely with the interior of said sample cell; said flange designed to permit reciprocating said stirrer in said sample cell in a direction perpendicular to the direction of the radiation path; said opposed limbs including, within the interior of said sample cell, an intermediate region of reduced cross-sectional dimensions, and an inner-end-region of substantially increased cross-sectional dimensions; said inner-end-regions of said opposed limbs being spaced apart to permit radiation to pass therethrough and including a chamfered end-portion for contacting closed end of said sample cell.

4,283,142

TWO BEAM ALTERNATING LIGHT COLORIMETER

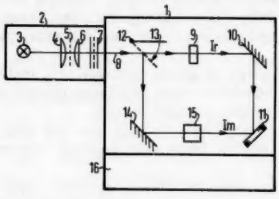
Hubert De Steur, Drongen; Chris Vandenbossche, Zwijnaarde, and Guido Heyneman, Knokke, all of Belgium, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Dec. 31, 1979, Ser. No. 108,461

Claims priority, application Fed. Rep. of Germany, Feb. 12, 1979, 2905230

Int. Cl.³ G01J *3/08, 3/42;* G01N *21/27*

U.S. Cl. 356—319 **6 Claims**



1. A two beam colorimeter, comprising:

a light source producing a light beam which passes through an illuminating lens system;

beam control means receiving the light beam after the illuminating lens system and for producing first and second measuring beams, said beam control means comprising a pivotable mirror positioned to pivot into the light beam so as to produce one of the first or second measuring beams;

the first measuring beam passing through a first measuring cell and the second measuring beam passing through a second measuring cell;

reflecting mirror means for guiding the first and second measuring beams to a common photo sensitive element which creates first and second output signals;

switching means synchronized with the pivotable mirror for connecting the first output signal to an analog memory at a time when a position of the pivotable mirror permits the first measuring beam to pass through the first measuring cell, and which disconnects the analog memory in correspondence with a position of the pivotable mirror which results in the second measuring beam passing to the second measuring cell; and

computing means connected to receive the second output signal and the first output signal via an output of the analog memory for evaluating these signals.

4,283,143

OPTICAL CHARACTERIZATION OF A SUSPENSION

James A. Patterson, Los Altos, Calif., assignor to Amco Standards International, Mountain View, Calif.

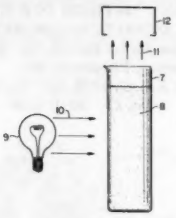
Filed Nov. 19, 1979, Ser. No. 95,578

Int. Cl.³ G01M *15/02*

U.S. Cl. 356—336 **2 Claims**

1. A method of determining the particle size distribution of an unknown liquid suspension comprising:

A. determining the nephelometric turbidity reading for a known standard liquid suspension;
B. determining the nephelometric turbidity reading for an unknown liquid suspension;
C. measuring the light scattering energy of the standard and unknown liquid suspensions;



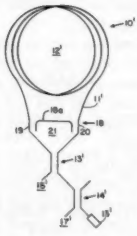
D. correcting the light scattering energy of the unknown liquid suspension for the physical characteristics of the suspended solids and liquid media; and
E. comparing the corrected light scattering energy of the unknown liquid suspension with the light scattering energy of the standard suspension.

4,283,144

METHOD OF FIBER INTERFEROMETRY ZERO FRINGE SHIFT REFERENCING USING PASSIVE OPTICAL COUPLERS

Matthew N. McLandrich, Carlsbad, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 16, 1979, Ser. No. 30,202
Int. Cl.³ G01C *19/64*
U.S. Cl. 356—350 **4 Claims**



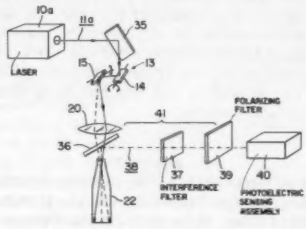
1. A method of zero fringe referencing a fiber interferometer gyro having its single mode optical fiber arranged in a loop about an area comprising:
energizing by pulsing a source of laser energy;
coupling the pulsed laser energy to effect the simultaneous bidirectional travel thereof in the loop around the area;
splitting off portions of the simultaneously traveling bidirectional pulsed laser energy before it enters the loop around the area;
generating zero rotation rate signals representative of the effects the pulsed laser energy source response and the photodetector response have on the split off portions of the bidirectional pulsed laser energy;
generating unknown rotation rate signals representative of the effects the rotation of the loop, pulsed laser energy source response and photodetector response have on the bidirectional laser energy traveling through the loop the generation of the zero rotation rate signals are first in repetitive sequence to the generation of the unknown rotation rate signals; and
referencing the unknown rotation rate signals to the zero rotation rate signals to allow for responsive compensation.

4,283,145

OPTICAL SYSTEM FOR THE DETECTION OF FLAWS IN BOTTLES OR THE LIKE

Takashi Miyazawa, Funabashi, Japan, assignor to Kirin Beer Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 13, 1979, Ser. No. 11,813
Int. Cl.³ G01N *21/01*
U.S. Cl. 356—364 **10 Claims**



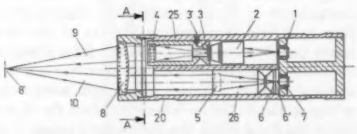
1. In a system for detecting flaws in bottles or like articles having a neck or constricted area near the top thereof, said system including a light beam generating means, a device for causing scanning motion of said light beam through an article to be tested, and a photoelectric detecting means adapted for detecting variation of said scanned light beam thereby to detect a flaw in the article the improvement wherein said system comprises: a laser beam generating means for generating a narrow beam of light; mirror means comprising two mirrors having respective reflective surfaces arranged so as to reflect said laser beam one after the other and supported so as to be oscillated about respective axes at right angles to each other and lying in respective planes which substantially coincide with the respective reflective surfaces for generating a scanning motion of the laser beam; means for imparting correlated oscillations to said two mirrors whereby the beam is angularly scanned in a spiral path; a positive lens for receiving said scanned beam and for redirecting it through a cross-over point or small region positioned within said bottle or article at said neck or constricted area; and, a photoelectric detector means adapted for receiving said spirally scanned laser beam after it has passed through or been reflected by said article thereby to detect a flaw in the article to be tested.

4,283,146

OPTICAL DETECTOR

Philippe Roussel, Thun, Switzerland, assignor to Lasag S.A., Thun, Switzerland

Filed Nov. 30, 1978, Ser. No. 964,884
Int. Cl.³ G01N *21/55*; G01B *11/00*
U.S. Cl. 356—445 **23 Claims**



1. An optical detector for the detection of very small objects comprising:
(a) a first optical system defining an optical path and being operable to transmit electromagnetic radiation;
(b) a second optical system defining an optical path parallel to said optical path of said first optical system and being

operable to receive said electromagnetic radiation after diffusion by an object; and

(c) a converging lens associated in common with said first and second optical systems and arranged such that said optical paths of said first and second optical systems are parallel to and symmetrical about the axis of said converging lens on one side thereof, wherein

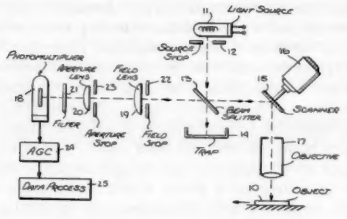
(d) said first optical system comprises means for transmitting said electromagnetic radiation to said converging lens in a parallel beam, said means for transmitting said electromagnetic radiation comprising a positive lens preceded in said first optical system by a source of said electromagnetic radiation, a condenser for collecting said electromagnetic radiation, and interchangeable diaphragms, each diaphragm having a hole of a different size whose image is transmitted by said electromagnetic radiation to the focal point of said positive lens, said hole being situated at the focus of said condenser.

4,283,147

ELECTRO-OPTICAL SCANNING SYSTEM

Marc G. Dreyfus, Old Greenwich, and Arnold Pellman, Stamford, both of Conn., assignors to Dreyfus-Pellman, Stamford, Conn.

Filed Jun. 14, 1979, Ser. No. 48,632
Int. Cl.[3] G01N *21/55*
U.S. Cl. 356—445 **7 Claims**



1. A defocusable electro-optical system for scanning the quasi-specular surface of an object to be examined with a light beam to produce a reflection light pattern that depends on the relative reflectivity of the different components which make up the surface, said system comprising:

A. a light source producing an illumination beam;

B. an objective for focusing light on said object surface;

C. a scanning mechanism to direct said illumination beam through said objective to focus said beam onto said surface when said surface lies in the focal plane which is perpendicular to the optical axis of the objective, said object being subject to axial displacement relative to said plane;

D. a photodetector;

E. means to direct the beam reflected from said surface through a field stop onto said photodetector which yields a signal depending on the relative reflectivity of said components as the illustrated beam scans across said surface, said field stop limiting the size of the viewed area when the object surface lies in the focal plane; and

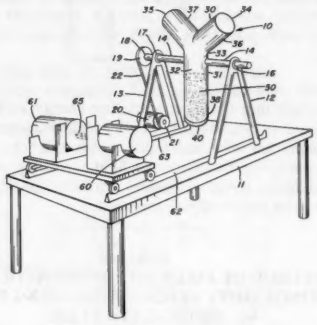
F. means illuminating the viewed object surface in a manner imaging thereon an image of the light source comparable in size to the field stop whereby, when the object surface lies in the focal plane, the light source image is coincident therewith, and when the object surface is axially displaced from the focal plane and is out of focus, the light source image assumes an aerial position between the objective and the object surface and is relayed by the objective to function as a virtual stop, said virtual stop serving to delete that portion of the rays reflected from the object surface which otherwise would cause the image of the object to blur, thereby to limit defocus-blurring of the object image.

4,283,148

APPARATUS AND METHOD FOR SOLID PARTICLE BULK DENSITY MEASUREMENTS

Richard W. Peterson, Lower Burrell, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed Jul. 12, 1979, Ser. No. 56,802
Int. Cl.[3] B01F *9/00*
U.S. Cl. 366—142 **5 Claims**



1. Apparatus for blending a multiplicity of solid particles having a plurality of different particle sizes into a homogeneous mass, comprising:

(a) a container including

(i) an elongated hollow principal section enclosing an elongated compartment, said principal section having a first end portion and a second end portion opposed to said first end portion;

(ii) a hollow first leg section attached to the first end portion of the principal section and extending axially and radially outwardly thereof at an obtuse angle to the principal section, said first leg section enclosing a first chamber communicating with the compartment in the principal section;

(iii) a hollow second leg section attached to the first end portion of the principal section and extending axially and radially outwardly thereof at an obtuse angle to the principal section, said second leg section enclosing a second chamber communicating with the first chamber in the first leg section and with the compartment in the principal section;

(iv) a hollow third leg section attached to the second end portion of the principal section and extending axially and radially outwardly thereof at an obtuse angle to the principal section, said third leg section enclosing a chamber communicating with the compartment in the principal section; and

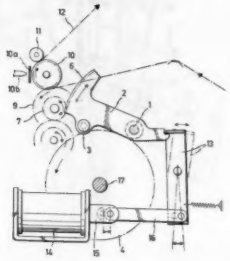
(v) a hollow fourth leg section attached to the second end portion of the principal section and extending axially and radially outwardly thereof at an obtuse angle to the principal section, said fourth leg section diverging from the third leg section at an angle of less than 180°, said fourth leg section enclosing a chamber communicating with the chamber in the third leg section and with the compartment in the principal section; and

(b) pivot means attached to the container, said container being rotatable about said pivot means to blend a multiplicity of solid particles contained therein into a homogeneous mass.

4,283,149
PAPER TRANSPORTING DEVICE FOR CASH REGISTERS, DATA PROCESSING MACHINES OR THE LIKE

Gerhard Rethmeier, Bielefeld, Fed. Rep. of Germany, assignor to Control Commerce AG, Ilanz, Brabunden, Switzerland

Filed Jan. 21, 1980, Ser. No. 113,764
Claims priority, application Fed. Rep. of Germany, Jan. 24, 1979, 2902654
Int. Cl.[3] B41J *19/78, 11/14*
U.S. Cl. 400—617 6 Claims

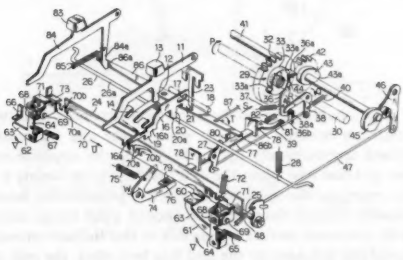


1. Paper transporting device, comprising a motor driven cam disc having a contoured surface and a plurality of depressions of varying depth formed therein, a gear segment lever pivotally mounted about a fixed axis, gear teeth and a roller integral with said gear segment lever, said roller being operable to contact said cam disc, a gear operable to mesh with said gear teeth of said gear segment lever, a free running clutch driveable by said gear, a paper transport roller driveable by said free running clutch, means for locking said gear segment lever in a swung-out position, and a pivotable curved lever having a free end, said curved lever being disposed in one of said depressions formed in said cam disc and being rotatable therewith, said free end of said curved lever being biased against said contoured surface of said cam disc.

4,283,150
TYPEWRITER

Masami Hanazono; Tomoyoshi Watanabe; Toshio Nakai; Susumu Kuzuya; Akira Asai; Takayuki Iwase; Kazuo Nakamura, and Hiroshi Onoda, all of Nagoya, Japan, assignors to Brother Kogyo Kaisha, Aichi, Japan

Filed May 14, 1979, Ser. No. 38,845
Claims priority, application Japan, May 27, 1978, 53-63662
Int. Cl.[3] B41J *5/22, 23/02*
U.S. Cl. 400—666 5 Claims



1. In an electric typewriter having a keyboard with a plurality of keys, a continuous rotating motor and a printing mechanism including a character selecting mechanism, the improvement which comprises:

a plurality of interposers movably supported beneath said keyboard, each of said interposers being depressible by respective one of said keys of said keyboard;

a common drive member located adjacent to all of said interposers and actuating any depressed one of said interposers for operating said character selecting mechanism in said printing mechanism;

a clutch disposed between said motor and said drive member;

a regulating lever, disposed adjacent to said clutch, being movable between a first position for keeping said clutch in a disengaged condition and a second position for allowing said clutch to be engaged;

holding means disposed between said regulating lever and each of said interposers, said holding means normally holding said regulating lever in said first position and permitting movement of said regulating lever from said first position to said second position when any of said interposers is depressed;

a cam member rotated for returning said regulating lever to said first position upon engagement of said clutch;

a sensing member movably supported in parallel to and operatively connected with said drive member for being reciprocally moved in a first direction, said sensing member being further moved in a second direction by a second one of said interposers depressed subsequently while said sensing member is still in a course of the reciprocal movement caused by a previously depressed one of said interposers;

a lock member disposed engageably with said regulating lever in said first position for locking said clutch in the disengaged condition;

a latch member operatively engaged with said sensing member and said lock member respectively, said latch member being normally kept in a latching position to hold said lock member away from said regulating lever and being moved from the latching position by said sensing member when said sensing member is moved in the second direction;

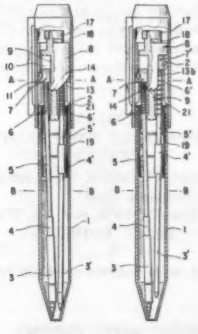
a spring for pulling said lock member toward said regulating lever when said latch is moved from the latching position; and

returning means connected with at least one special key of said keyboard for returning said lock member to the position normally held away from said regulating lever.

4,283,151
COMPOUND WRITING INSTRUMENT

Kazuhiko Sekiguchi, Tokyo, Japan, assignor to Zebra Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 972,484, Dec. 22, 1978, abandoned.
This application Mar. 6, 1980, Ser. No. 127,982
Int. Cl.[3] B43K *27/14*
U.S. Cl. 401—33 4 Claims



1. A compound writing instrument comprising a lower barrel accomodating a retractable mechanical pencil unit and a

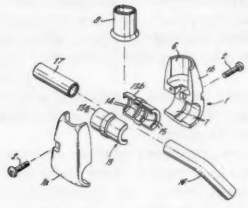
ball point pen unit; an upper barrel rotatable in one or both directions relative to said lower barrel around its axis and overlapping the upper portion of said lower barrel; a cam mechanism in said upper barrel including a curved casing engaging said units for selectively shifting said units in the axial direction into a writing position when said upper barrel is rotated, said cam mechanism permitting said upper barrel to shift relative to said lower barrel in the axial direction enough to feed out the lead in said mechanical pencil unit when this unit is in the writing position, while said upper barrel is made non-shiftable relative to said lower barrel when said ball point pen unit is in the writing position.

4,283,152

HAND AND GUARD RAILS

Sydney J. Smith, and Peter F. Chambers, both of Nr. Preston, England, assignors to British Leyland UK Limited, London, England

Filed Mar. 14, 1977, Ser. No. 777,144
Int. Cl.³ F16B *7/08*
U.S. Cl. 403—3 **2 Claims**



1. An assembly for use in constructing a hand and/or guard rail characterized by:

(a) a clamp member (**1**) comprising two identical elements, each element having two semi-circular sectioned portions (**6,7**) at right angles to one another and the two elements being detachably connected to each other by securing means (**2**) so that each of the two corresponding semi-circular portions cooperate to form two tubular portions at right angles to each other; and

(b) a tubular rail member (**4**) having an external diameter substantially the same as the internal diameter of the tubular portions (**6**) of the clamp member (**1**) and adapted to fit in the tubular portion (**6**) to be clamped therein by the securing means,

and further comprising a two-piece generally cylindrical adaptor (**13**) which is split axially to form two portions (**13*a*, 13*b***) which are of substantially semi-circular cross-section, each portion having at least two internal webs (**14, 15**) of different diameter so that when the adaptor is fitted within the clamp member (**1**) it can grip the ends of two tubes of different diameters within the clamp member.

4,283,153

COMPLIANT APPARATUS WITH REMOTE SMEARED CENTERS

David A. Brendamour, Cincinnati, Ohio, assignor to Cincinnati Milacron Inc., Cincinnati, Ohio

Filed Dec. 21, 1978, Ser. No. 971,850
Int. Cl.³ G01B *5/25*
U.S. Cl. 403—53 **5 Claims**

1. An apparatus with remote multiple rotational centers, comprising:

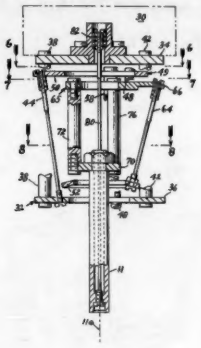
(a) a base;

(b) a first intermediate support member;

(c) a first set of rotational supports obliquely extending from said base to said intermediate support member, each of said rotational supports in said first set having lines of action along spherical radii on a first sphere having a first remote center;

(d) a second intermediate support member;

(e) a second set of rotational supports obliquely extending from said first intermediate support member to said second intermediate support member, each of said rotational



supports in said second set having lines of action along spherical radii of a second sphere having a second remote center noncoincident with said first remote center; and

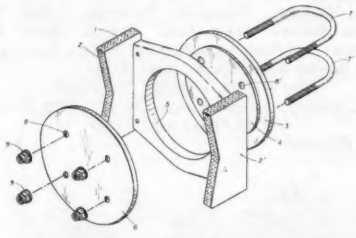
(f) an end-effector connected to said second intermediate support member, said end-effector being rotatable about a remote pivot point which lies between said first and said second centers.

4,283,154

COUPLING DEVICE

Joel D. Shepherd, 7441 E. 84th St., Tulsa, Okla. 74133

Filed Aug. 13, 1979, Ser. No. 66,034
Int. Cl.³ F16D *1/12*
U.S. Cl. 403—78 **5 Claims**



1. A coupling device comprising a first base plate with at least two attached segments, each of the said segments positioned approximately perpendicular on the oppsoite ends of the said first base plate, the said first base plate having a circular opening, the said opening being suitable for housing a slidable second plate, the said second plate being structured with a recessed surface on one side so that the said second plate is slidable mounted on the said first base plate, the said second plate having at least one U-bolt passing through it for holding the said second plate in selected positions on the circular opening of the said first plate, the said U-bolt passing through a pair of drilled holes in the said slidable second plate and through a second pair of drilled holes in a third plate, the said U-bolt being fastened securely by a pair of lock washers and nuts.

4,283,155

APPARATUS FOR CONNECTION OF OPERATING ROD

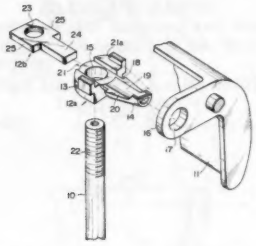
Haruo Yamazaki; Masaharu Matsumoto, both of Yokohama, and Shigeru Kimura, Kamakura, all of Japan, assignors to Nifco Inc. and Ohi Seisakusho Co., Ltd., both of Kanagawa, Japan

Filed Dec. 26, 1979, Ser. No. 106,459

Claims priority, application Japan, Dec. 23, 1978, 53-175467[U]

Int. Cl.³ F16C *11/00*

U.S. Cl. 403—163 **5 Claims**



1. An apparatus for rotatably connecting an operating rod to a fitting having a hole therein, which apparatus comprises:

a one piece main plastic connection member including a head portion having retention means provided thereon for retaining said operating rod extending in one direction and having opposed surfaces defining an opening therethrough; an engaging leg portion extending transversely of said one direction from a side of said head portion for insertion into said fitting hole, said leg portion having shoulder means on a peripheral surface thereof for engaging said fitting and having means defining a hollow portion therein in communication with the opening of said head portion; and

a metallic insertion member removably insertable in said opening and said hollow portion, said insertion member including female screw hole means in alignment with said retention means for helical union with a male screw formed on a peripheral surface of said operating rod.

4,283,156

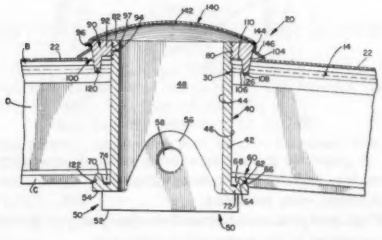
JOINT FOR SPACE FRAMES

George C. Harper, Jr., Coraopolis, Pa., assignor to Pittsburgh-Des Moines Steel Company, Pittsburgh, Pa.

Filed Apr. 8, 1980, Ser. No. 138,526

Int. Cl.³ F16B *1/00*

U.S. Cl. 403—218 **5 Claims**



1. A joint connector for use in space frames to connect a plurality of struts together, comprising:

an integral, tubular hub having a wall, and first and second ends with a gripping jaw being located on said first end, and hub fastening means being located on said second end, said gripping jaw including a flange spaced from said hub wall and surrounding said hub wall;

a clamping ring having fastening means for cooperating with said hub fastening means to releasably secure said clamping ring to said tubular hub, said clamping ring including a flange which is spaced from said hub wall and extending toward said gripping jaw flange when said clamping ring is secured to said hub;

a lifting stirrup attached to said first end and including a base spanning said first end and an ear attached to said base and terminating in said hub, said ear having attaching means defined therein for attaching a lifting device to said stirrup; and

said clamping ring and gripping jaw sandwiching a strut therebetween to attach such strut to said hub.

4,283,157

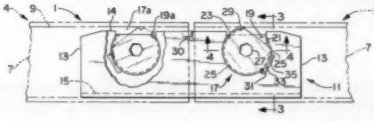
CONNECTOR

Joseph W. Kowalski, Florissant, Mo., assignor to B-Line Systems, Inc., Highland, Ill.

Filed Oct. 4, 1979, Ser. No. 81,652

Int. Cl.³ F16D *1/00*

U.S. Cl. 403—297 **22 Claims**



1. A connector in combination with a channel having a web and side flanges with inwardly turned lips defining a slot therebetween, said connector comprising,

an elongate connecting member having a pair of side walls, said member being axially inserted inside the channel with an open side of the member toward the channel slot and the side walls of the member adjacent and parallel to the side flanges of the channel, and

cam means mounted in at least one side wall of the member for movement from a retracted position to a locking position in which, with the member inside the channel, the cam means engages a lip of the channel to force the member toward the web of the channel for engagement therewith thereby rigidly to secure the channel to the member.

4,283,158

COUPLING DEVICE

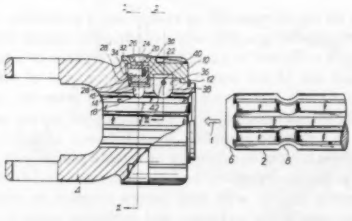
Kenichi Takahata, Tokyo, Japan, assignor to Matsui Universal Joint Mfg. Co., Tokyo, Japan

Filed Dec. 29, 1978, Ser. No. 974,346

Claims priority, application Japan, Jun. 15, 1978, 53-71442

Int. Cl.³ F16B *7/00*

U.S. Cl. 403—322 **10 Claims**



1. A coupling device including a male member having a tapered tip portion and a lock groove and a female member for receiving said male member, comprising a lock pin resiliently

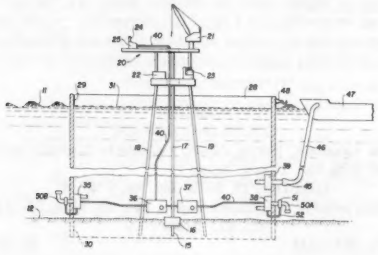
urged toward said male member by means of spring means such that when said male member is inserted into said female member said lock pin is forced away from said male member by a camming action of the tapered tip portion of the male member and extends into said lock groove when said lock pin is placed in opposition to said lock groove by a further insertion of the male member into said female member; an outer race rotatively resiliently urged in one direction relative to said female member by outer race spring means and formed with a recess for receiving a part of said lock pin to enable its removal from said lock groove of said male member, said outer race being rotated by said outer race spring means when said lock pin extends into said lock groove of said male member to locate said recess of the outer race in a position remote from said lock pin to lock it relative to said male member; a slide pin for locking said outer race relative to said female member when said male member is not in said female member and releasing said outer race relative to said female member by a movement of said slide pin when said male member is inserted in said female member; and an outer race lock pin urged by outer race lock pin spring means to lock said outer race relative to said female member when the outer race is rotated to bring said recess in alignment with said lock pin for removing said male member from said female member.

4,283,159

PROTECTIVE SHROUD FOR OFFSHORE OIL WELLS

Albert O. Johnson, Rte. 8, Box 1052, Livingston, Tex. 77351, and David Personette, 13307 Barryknoll, Houston, Tex. 77079

Filed Oct. 1, 1979, Ser. No. 80,234
Int. Cl.³ E02B *3/00, 15/04, 17/02;* **E21B** *43/01*
U.S. Cl. 405—60 **27 Claims**



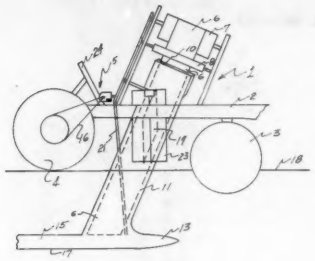
1. An oil rig instrumentality comprising a protective shroud member comprising a generally cylindrically shaped structure of a length sufficient to extend from the bottom of a body of water and out of the water at the surface, and of sufficient diameter to encompass an oil wellhead and attendant rigging servicing an underwater well, said structure having near its bottom in a position assuming an underwater location above and near the bottom of said body of water a plurality of pumping means distributed about the circumference of said structure for pumping liquids with said pumps coupled to water jet structure outside the cylinder, and including control means individually controlling operation of each of said pumping means, thereby to provide controlled water jet motive forces for moving said structure relative to said bottom of the body of water.

4,283,160

CORRUGATED PIPE FABRICATOR AND INSTALLER DEVICE AND METHODS OF MAKING AND USING THE SAME

William M. Angle, 219 N. John, Troy, Mo. 63379

Filed Mar. 7, 1979, Ser. No. 18,155
Int. Cl.³ E02D *29/10;* **E02F** *5/10;* **F16L** *1/02*
U.S. Cl. 405—156 **5 Claims**



1. A corrugated pipe fabricator and installer device comprising,

frame means,

a mole plow operably mounted on the frame means, said mole plow provided with an upper portion and base portion,

a rotating cylinder operably coupled to said mole plow, and disposed in the base portion of said mole plow,

spool means operably mounted on said frame means,

roller means operably mounted on said frame means,

corrugated sheet material mounted on said spool means and passed between said roller means and then passed about said rotating cylinder,

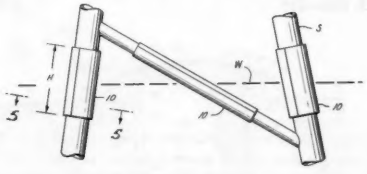
driving means for rotating said spool means, said roller means and said rotating cylinder operably mounted on said frame means.

4,283,161

METHOD AND APPARATUS FOR A GUARD

Orde R. Evans; William D. Rhodes, and Joseph O. Trahan, all of Lafayette, La., assignors to Oreco III, Inc., Lafayette, La.

Continuation-in-part of Ser. No. 784,585, Apr. 4, 1977, abandoned. This application Jun. 2, 1978, Ser. No. 911,909
Int. Cl.³ E02D *5/60*
U.S. Cl. 405—216 **6 Claims**



1. A guard for protecting existing offshore structures, platforms, legs and the like from environmental conditions in the wave action area, including:

(a) an epoxy mounted around the periphery of the existing structure in the wave action area; and

(b) a body of flexible material mounted with said epoxy on the structure suitable for protecting existing structures from environmental conditions.

(c) said body having

(i) a width sufficient to extend throughout the wave action area,

(ii) a length sufficient to enable said body to overlap when wrapped around the structure, and

(iii) at least two cut-away areas on opposite sides of said body for overlapping one another.

(d) said cut-away areas of said body being of less thickness than the thickness of the non-overlap portion of said body while having complimentary thicknesses to enable said body to be of the same thickness when mounted with the existing structures.

4,283,162

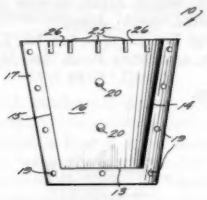
PILING ANCHORING

Eugene R. Parker, Jr., 715 Edgewater Ave., Ocean City, and Melvin B. Bryant, Old Ocean City Rd., West Ocean City, both of Md. 21842

Filed Aug. 15, 1979, Ser. No. 66,825

Int. Cl.³ E02D *5/54*

U.S. Cl. 405—244 **21 Claims**



1. A piling assembly comprising an elongated piling having first and second ends;

first, second, third, and fourth anchors, each anchor having a circumferential extent less than one-half the circumference of said piling, and extending radially outwardly from the piling, and having a given axial extent;

said anchors being attached to said piling so that said first and second anchors are disposed opposite each other at a first position adjacent, but spaced from, said piling first end, and said third and fourth anchors being disposed opposite each other at a second position adjacent, but spaced from, said piling first end a greater distance than the sum of the distance said first position is spaced from said piling first end and the axial length of an anchor; and said third and fourth anchors being circumferentially displaced from said first and second anchors around said piling; and

each of said anchors comprising a pocket member of rigid material defined by a plate and a hollow, open-based, truncated pyramid section extending along said plate with the height of said pyramid section generally coincident with the axial extent of said anchor.

4,283,163

CUTTING TOOL WITH REPLACEABLE EDGE CUTTING BIT

Werner Gräfe, Reutlingen, and Willy Schlotterer, Nehren, both of Fed. Rep. of Germany, assignors to Montanwerke Walter GmbH, Tübingen, Fed. Rep. of Germany

Filed Jan. 29, 1980, Ser. No. 116,536

Claims priority, application Fed. Rep. of Germany, Feb. 17, 1979, 2906148

Int. Cl.³ B26D *1/12*

U.S. Cl. 407—104 **9 Claims**

1. Cutting tool to hold a replaceable, rotatable cutting bit (**6**) having

a cutter body (**1**) formed with

a plane support surface (**3**) to support the bit (**6**);

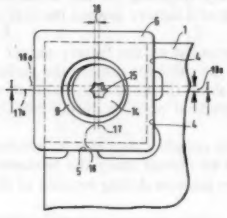
lateral abutment surfaces (**4**, **5**) to position the bit thereagainst;

a bore (**10**) extending into the cutter body from the support surface in a direction at least generally perpendicular to the support surface and being formed with an enlarged recess portion (**19**);

and a clamping bolt (**12**) to releasably clamp the bit (**6**) on the support surface and against the abutment surfaces, screwed into the bore (**10**), said clamping bolt having an at least part-conical clamping head (**13**, **14**, **15**) fitting into a clamping opening (**8**, **9**) formed in the bit, and an enlarged conical intermediate portion (**25**), radially projecting from the shank (**25***a*, **25***b*) of the bolt and fitting into the enlarged recess portion (**19**) of the bore (**10**) in the cutter body (**1**);

and wherein, in accordance with the invention,

the enlarged portion (**19**) is of elongated shape having a length which is greater than the diameter of the conical intermediate portion (**25**) of the clamping bolt (**12**),



a subportion of said enlarged conical portion extending over part only of said enlarged portion having circular cross section and a circle axis which coincides with the axis (**17**) of the bore (**10**) to provide for part-circumferential surface guidance of the conical intermediate portion (**25**) of the bolt (**12**);

and wherein the length axis (**24**) of the elongated enlarged portion extending transverse to the axis (**17**) of the bore is directed towards at least one of the lateral abutment surfaces (**4**, **5**) of the body to draw the bit, upon tightening of the bolt (**12**) in the bore, against the support surface and against the abutment surface, the elongated enlarged portion permitting resilient deflection of the bolt between the part thereof which is screwed into the bore and the clamping head.

4,283,164

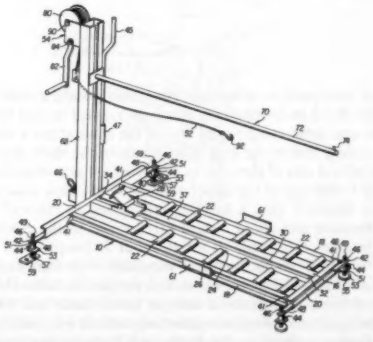
BATTERY MOVER

Lawrence A. Reaney, 3713 38th Ave., Brentwood, Md. 20722

Filed Nov. 26, 1979, Ser. No. 97,175

Int. Cl.³ B65G *67/04, 67/24*

U.S. Cl. 414—396 **10 Claims**



1. A battery mover comprising:

(a) a horizontal frame having a longitudinal axis along which are disposed a plurality of rotatable elements which per-

mit a battery disposed on the frame to be moved along the longitudinal axis, the horizontal frame member having a section which is adapted to be disposed in contact with a battery compartment,

(b) a vertical section joined to the horizontal frame,

(c) a locating means for aligning the horizontal frame with respect to a battery compartment which contains a battery to be moved and for preventing movement of the horizontal frame with respect to the battery compartment when the section of the horizontal frame is disposed in contact with the battery compartment,

(d) a winch disposed on the vertical member for reeling and unreeling a cable,

(e) a pusher slidably mounted in the horizontal frame which is movable between first and second longitudinal positions along the horizontal frame, the pusher engaging the edge of a battery disposed on the horizontal frame during movement of a battery toward the first longitudinal position,

(f) means mounted on the battery mover for coupling the pusher to the cable for causing the pusher to move longitudinally along the horizontal frame member toward the first longitudinal position during rotation of the winch, and

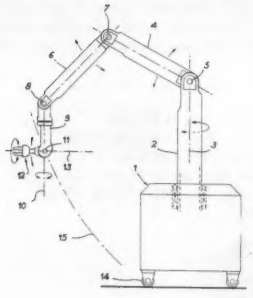
(g) means for coupling the cable to a battery for causing a battery to be moved along the horizontal frame toward the section position during rotation of the winch.

4,283,165

MOTORIZED MANIPULATOR OF THE CABLE TRANSMISSION TYPE HAVING AN INCREASED FIELD OF ACTION

Jean Vertut, Issy-les-Moulineaux, France, assignor to Commissariat a l'Energie Atomique, Paris, France

Filed Sep. 4, 1979, Ser. No. 72,246
Claims priority, application France, Sep. 4, 1978, 78 25413
Int. Cl.[3] B25J *5/00*
U.S. Cl. 414—733 **13 Claims**



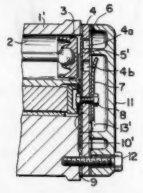
1. A manipulator, wherein it comprises a body, a shaft which rotates about its longitudinal axis with respect to said body, an upper arm articulated to the end of the shaft about a shoulder axis orthogonal to the longitudinal axis of the shaft and to the longitudinal axis of the arm, an intermediate arm directly articulated to the end of the upper arm about an elbow axis parallel to the shoulder axis, a forearm articulated to the end of the intermediate arm about a third axis parallel to the elbow axis, said forearm being able to rotate about its longitudinal axis, a tool having a longitudinal axis mounted in pivotal manner at the end of said forearm about an axis perpendicular to the plane defined by the longitudinal axes of the forearm and tool, the tool being able to rotate about its longitudinal axis and a plurality of motors fixed to the body and transmission means by cables and pulleys for transmitting the control movements of the motors to the corresponding moving members of the manipulator, wherein the body is mounted on wheels and wherein it comprises a drive motor for rotating the said shaft with respect to the body about its longitudinal axis and transmission means for linking the rotation of said shaft with the rotation of said wheels about their vertical pivot axes in such a way that the common direction taken by the wheels coincides with the projection on the displacement plane of the manipulator of the direction of the longitudinal axis of the arm.

4,283,166

FLUID SUCTION AND DISCHARGE APPARATUS

Masaharu Hiraga, Isesaki, Japan, assignor to Sankyo Electric Company, Limited, Isesaki, Japan

Filed Jan. 23, 1979, Ser. No. 5,917
Claims priority, application Japan, Jan. 24, 1978, 53-5800
Int. Cl.[3] F04B *1/12*
U.S. Cl. 417—269 **3 Claims**



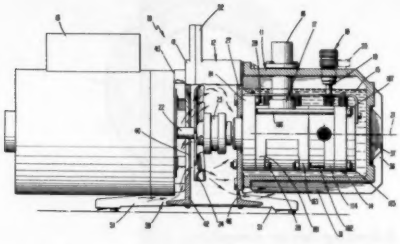
1. In a fluid suction and discharge apparatus including a cylinder block formed with a plurality of cylinders in parallel with one another and in spaced annular relation around a center axis thereof, said cylinder block being formed with a spot faced recess in one end surface thereof at the central region which connects all cylinders, pistons slidably reciprocable in said cylinders for fluid suction and discharge, a valve plate secured to said cylinder block at the end thereof with inlet and outlet openings in registry with each of said cylinders, discharge valve means, a sheet of suction reed valve formed from a metal sheet having a smaller diameter than said valve plate and comprising a central portion and a plurality of suction reeds extending radially outwardly therefrom corresponding to respective said cylinders, said suction reed valve means being received in said recess and held between said cylinder block and said valve plate, and a gasket of similar extent as said valve plate being placed between, and being in contact with, said cylinder block and said valve plate at the peripheral portion thereof, and said cylinder block and said suction reed valve means at the central portion thereof, the improvement comprising: said suction reeds intersecting the outer periphery of said cylinders at a point P_2, the center of each cylinder being at a point c, a line c—c extending between said cylinders, the center of said cylinder block being at a point O_1, a point P_1 being defined as a point on the outer periphery of said cylinder symmetrical about line c—c on the other side thereof, the radius of said spot faced recess being R, wherein $a<R<b$ in which a is the distance between points O_1 and P_1 and b is the distance between O_1 and c plus the radius of said cylinder, and said suction reed valve means being formed with a plurality of radial fingers each of which extends radially outwardly from said central portion to the peripheral edge of said spot faced recess between adjacent two reeds covering said cylinder block end surface region between adjacent cylinders.

4,283,167

COOLING STRUCTURE FOR AN OIL SEALED ROTARY VACUUM PUMP

Benjamin Bassan, Framingham, and Michael A. Grandinetti, Stoughton, both of Mass., assignors to Varian Associates, Inc., Palo Alto, Calif.

Filed Apr. 26, 1979, Ser. No. 33,631
Int. Cl.[3] F04C *25/02, 27/02, 29/02, 29/04*
U.S. Cl. 418—13 11 Claims



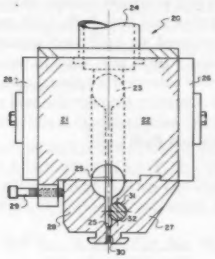
1. An oil sealed, mechanical rotary vane vacuum pump having high vacuum and low vacuum stages for a pumped gas, each of said stages being located in a housing immersed in an oil pool, a casing in which the housing and oil pool are located, each of said stages including a rotor for vanes cyclically driven about a common axis that is eccentric to a cylinder of a stator, the stator of each stage including an inlet and outlet for the pumped gas, an oil seal between the inlet and outlet of the stages in a narrow gap between the stator and rotor, an interstage structure being the high and low vacuum stages, said interstage structure including a flow path between the stages for the pumped gases and a first shaft drivingly connecting the rotors of the high and low vacuum stages, an oil flow path between the pool and the stages comprising a first passage through the interstage structure leading radially to the shaft from a source of oil, said first passage having a first orifice into a bore in the interstage structure through which the shaft extends, the shaft including a recess longitudinally aligned with the first orifice so that oil is metered to the recess as the shaft is rotated, a second passage through the interstage structure longitudinally aligned with the recess and leading from the bore to one face of the cylinder of the low vacuum stage so oil metered to the recess flows to the cylinder of the low vacuum stage to form the oil seal and lubricate surfaces between the rotor and stator, the interstage structure including a third oil passage enabling oil to be sucked from the low vacuum stage to the high vacuum stage, said third passage having an inlet from the low vacuum stage on a first face of the low vacuum stage cylinder adjacent the interstage structure, the second passage having an orifice on a second face of the low vacuum stage cylinder opposite the first face, a conduit extending from a casing inlet through the oil pool to a housing inlet and thence to the high vacuum stage inlet, another shaft extending through the casing and housing to drive the high vacuum stage rotor and the low vacuum stage rotor via the first shaft, a motor having an output shaft aligned with and connected to the drive shaft for the pumping structure, the oil in the pool having a tendency to be heated as it flows from the pool to the interior of the housing, means for cooling the oil including: a fan mounted on the motor shaft and positioned between the motor and the casing for providing an air flow axially of the shaft without substantial centrifugal components, a shroud having a first opening for providing an axial air flow into the shroud away from the casing and toward the housing in response to the fan being driven by the motor, said shroud including outlets for providing axial flow from the bottom and sides of the shroud toward thhe casing for air pumped by the fan, the casing having vertically and horizontally extending fins respectively extending from bottom and side surfaces thereof, said fins being in heat exchange relation with air pumped by the fan through the shroud outlets.

4,283,168

THERMOPLASTIC FILM EXTRUSION APPARATUS

Douglas C. Miller, and Terry W. Wolfe, both of Covington, Va., assignors to Westvaco Corporation, New York, N.Y.

Filed Sep. 13, 1979, Ser. No. 75,229
Int. Cl.[3] B29D *7/04;* B29F *3/04*
U.S. Cl. 425—465 10 Claims



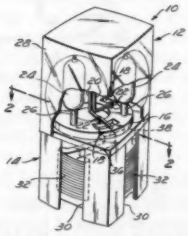
1. A thermoplastic film extrusion die having a viscous flow channel between a pair of opposed die jaw faces, one such jaw having a bore channel formed longitudinally therein to receive an axially elongated cylindrical rod means therewithin having a substantially smooth cylindrical surface, a chordal segment of the circular section of said rod projecting beyond said one jaw face partially into said flow channel to form a zone of open but restricted flow area extended continuously along the length of said flow channel between said smooth cylindrical surface and said other jaw face, said smooth cylindrical surface being interrupted at select locations along the length thereof by cordal flat means to increase the flow area and reduce the restriction to thermoplastic flow in said channel past said rod means in regions of said channel adjacent said chordal flat means.

4,283,169

HAND OPERABLE EMERGENCY SIGNALING DEVICE

Leon A. Tuomala, 1585 E. Cipres Ct., Camarillo, Calif. 93010

Filed May 18, 1979, Ser. No. 40,327
Int. Cl.[3] F21K *5/02*
U.S. Cl. 431—359 2 Claims



1. A distress and emergency signaling device comprising:
a flash cube constructed of a plurality of flash bulbs, each said flash bulb being separately activatable by activation means, said flash cube being polygonal shaped forming four in number of sides, there being a separate flash cube for each said side, said activation means for each said bulb comprising a cocked member under a continuous spring bias; and

a base fixedly attached to said flash cube, said base having a cross-sectional size substantially equal to the cross-sectional size of said flash cube, said base including manually operable actuation means, said actuation means comprises a separate actuation member for each said flash bulb with there being four in number of said actuation members, each said actuation member to connect with a separate said cocked member, each said actuation member being slidably mounted for lineal movement within a groove formed within a said base with there being a separate said groove for each said actuation member, said lineal movement for each said actuation member being directly in line with its respective said flash bulb, each said groove being sufficiently recessed so each said actuation member is totally recessed within said base to prevent accidental operation of said actuation members, upon manual operation of a said actuation member the said cocked member for the respective said flash bulb is activated which causes flashing of the said flash bulb.

4,283,170

METHOD OF FIRING A TUNNEL KILN WITH COAL, AND COAL FIRING INSTALLATION FOR TUNNEL KILNS

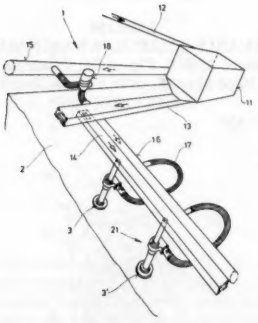
Manfred Leisenberg, Giessener Strasse 46, 6312 Laubach, Hessen, Fed. Rep. of Germany

Filed Sep. 10, 1979, Ser. No. 73,638

Claims priority, application Fed. Rep. of Germany, Jan. 12, 1978, 2801193

Int. Cl.[3] **F27D** *7/00;* **F27B** *9/26;* **F23K** *3/02*

U.S. Cl. 432—1 **14 Claims**



1. A method of firing a tunnel kiln with coal, the tunnel kiln being of the type having an air-tight bunker for accumulating a supply of coal, injectors at spaced locations over the firing zone of the kiln, an air-tight enclosed conveyor connecting the air-tight bunker and the injectors, and means for injecting air under pressure through an opening in the injectors in pulses, which comprises the steps of accumulating a supply of coal in the air-tight bunker, transporting the coal by means of the air-tight enclosed conveyor to the coal injectors, and selectively injecting air under pressure through the opening in the injectors in pulses to blow the coal therefrom in metered quantities into the firing zone.

4,283,171

HEATING DEVICE

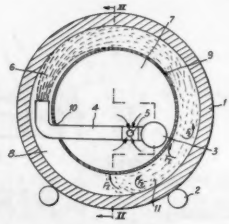
Jean A. L. Bronnec, Brest, France, assignor to Etablissements Generaux de Mecanique de l'Ouest, Brest, France

Filed Jul. 17, 1979, Ser. No. 58,277

Claims priority, application France, Jul. 26, 1978, 78 22097

Int. Cl.[3] **F27B** *6/08*

U.S. Cl. 432—112 **9 Claims**



1. A heating device comprising:

(a) at least one drum having a drum wall open at both ends thereof, said drum being positioned along an axis and being adapted to rotate continuously around a substantially horizontal axis;

(b) at least one burner arranged within said drum, said burner comprising:

(i) a nozzle adapted to direct a flame substantially perpendicular to a diametral plane of said drum; whereby heated gas is circulated adjacent to the wall of said drum; and

(ii) an air inlet for providing oxygen to said burner;

(c) a divider which is fixed with respect to said drum and is arranged to divide the interior space of said drum into a central space, and an exterior space positioned between said divider and said drum; and

whereby said burner nozzle is positioned in said exterior space while said air inlet to said burner is positioned within said central space.

4,283,172

HOT ISOSTATIC PRESSURE FURNACE WITH ENHANCED INSULATION PROPERTIES

Pertti Syväkari, Helsingborg, Sweden, assignor to ASEA Aktiebolag, Vesteras, Sweden

Filed Sep. 4, 1979, Ser. No. 72,316

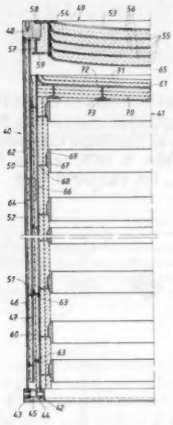
Claims priority, application Sweden, Sep. 6, 1978, 7809364

Int. Cl.[3] **F27D** *1/00, 23/00;* **F27B** *5/04*

U.S. Cl. 432—247 **7 Claims**

1. In a cylindrical, elongated furnace for the treatment of materials at high temperatures and in a gaseous atmosphere under high pressure, said furnace comprising a cylindrical pressure chamber which includes a high-pressure cylinder in which is located a furnace space; end closures projecting into the opposite ends of the high-pressure cylinder; force-absorbing members for absorbing axial forces exerted on the end closures; and an insulating mantle positioned between the high-pressure cylinder and the internally-located furnace space, said insulating mantle including an innermost concentric tube nearest said furnace space, at least one outermore concentric tube enclosing said innermost concentric tube, an insulating material located between said innermost concentric tube and the nearest said outermore concentric tube, an insulating lid and an insulating bottom, the improvement wherein the said innermost concentric tube includes a number of clamping rings

on the inner side thereof facing said furnace space and wherein at least one layer of felt-like insulating material is positioned



against said inner side of said innermost concentric tube by said clamping rings.

4,283,173

DEVICE FOR THE PRODUCTION OF A DENTAL WORKING MODEL FOR THE PREPARATION OF PROSTHETIC WORKS

Laurence S. Browne, Godalming, England; Frank D. Braun, and Walter Witt, both of Cologne, Fed. Rep. of Germany, assignors to Jet-Ceramic Dental GmbH & Co. KG, Cologne, Fed. Rep. of Germany

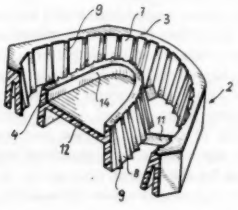
PCT No. PCT/DE 78/00015, § 371 Date Apr. 1, 1979, § 102(e) Date Mar. 28, 1979, PCT Pub. No. WO 79/00076, PCT Pub. Date Feb. 22, 1979

This PCT application filed Jul. 26, 1978, Ser. No. 24,862

Claims priority, application United Kingdom, Aug. 1, 1977, 32133/77

Int. Cl.³ A61C *19/00*

U.S. Cl. 433—34 **12 Claims**



1. Device for production of a dental working model for preparation of a prosthetic work comprising:

a one-part base mould which functions as a model base;

said base mould including a substantially semicircularly shaped outside wall spaced from a substantially parabolically shaped inner wall, and a rear wall connecting said inner and outside walls for closing off a rear side of said base mould;

said outside, inner and rear walls providing a hollow space which is completely surrounded by said outside, inner and rear walls;

said hollow space enlarging upwardly from a bottom of said base mould to a top of said base mould;

said hollow space including first opening means through said base mould bottom and also including second opening means through said base mould top to provide an open elongated passageway through said base mould, said first and second opening means extending substantially along a major longitudinal length of said hollow space from one portion of said rear wall on one side of said base mould to an opposing portion of said rear wall on an opposite side of said base mold to define said open elongated passageway for permitting removal of a casted plaster model from said hollow space of said base mould;

rib means disposed on facing wall surfaces of said hollow space for providing retention marks on the plaster model, said rib means including ribs extending outwardly from said outside and inner walls into said hollow space; and

said outside and inner walls being of equal height with each of said ribs having a length equal to said height so that said ribs extend from within said first opening means of said base mould bottom to within said second opening means of said base mould top.

4,283,174

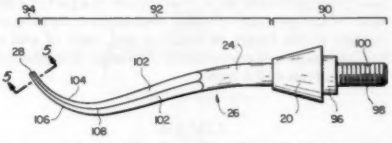
DENTAL SCALER HAVING SCALING TIP PARTICULARLY SUITABLE FOR CIRCULAR OR ELLIPSOIDAL PATTERNS OF VIBRATION

Anthony T. Sertich, 30 Dover Green, Staten Island, New York, N.Y. 10312

Filed Nov. 5, 1979, Ser. No. 91,013

Int. Cl.³ A61C *1/07*

U.S. Cl. 433—119 **23 Claims**



1. A dental scaler comprising:

elongated casing means having a proximal end and a distal end;

resilient support means within said casing means;

a rigid shaft supported within said elongated casing means by said resilient support means;

means for imparting vibration to said resiliently supported rigid shaft when said scaler is energized to provide vibratory movement to a work tool connected to said rigid shaft; and

a work tool connected to the distal end of said rigid shaft, said work tool comprising a rigid shank having an operative end and an end adapted to be connected to said rigid shaft, said operative end terminating in a curved free end, said operative end having a plurality of generally planar sides extending over a portion of the length thereof, a perpendicular cross-section of said operative end at any point along said portion thereof being a multi-sided figure, said curved free end lying in a plane passing through the longitudinal dimension of said work tool, said operative end being symmetrical about the plane passing through the longitudinal dimension of said work tool, the plane also passing through at least one junction formed by the intersection of an adjacent pair of two of said sides.

4,283,175

DENTAL SCALER HAVING SCALING TIP WITH ROUNDED EDGE WORK SURFACES PARTICULARLY SUITABLE FOR CIRCULAR OR ELLIPSOIDAL PATTERNS OF VIBRATION

John E. Nash, Downingtown, Pa., assignor to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed Nov. 5, 1979, Ser. No. 91,018

Int. Cl.³ A61C *1/07*

U.S. Cl. 433—119 **61 Claims**

1. A dental scaler comprising:

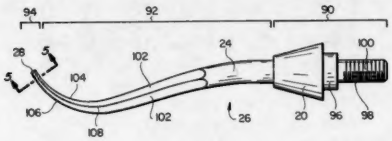
elongated casing means having a proximal end and a distal end;

resilient support means within said casing means;

a rigid shaft supported within said elongated casing means by said resilient support means;

means for imparting vibration to said resiliently supported rigid shaft when said scaler is energized to provide vibratory movement to a work tool connected to said rigid shaft;

a work tool connected to the distal end of said rigid shaft, said work tool comprising a rigid shank having an operative end and an end adpated to be connected to said rigid



shaft, said operative end terminating in a curved free end, said operative end having a plurality of sides extending over a portion of the length thereof, a perpendicular cross-section of said operative and at any point substantially along the entire longitudinal dimension thereof being a multisided figure;

said multi-sided figure having a plurality of edges, each of said edges provided by an intersection of a pair of adjacent sides of said plurality of sides, said edges extending over a portion of the length of said free end, each of said edges having a radius of curvature in the range from about 0.001 inch to about 0.005 inch.

4,283,176

ENDODONTIC-PROSTHETIC STABILIZATION SYSTEM

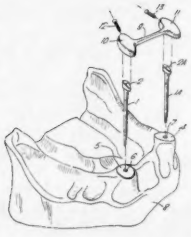
Tibor T. Vajda, 92 Edgecliff Rd., Woollahra, N. S. W., Australia

Filed Feb. 21, 1979, Ser. No. 13,115

Claims priority, application Australia, Feb. 25, 1978, PD6099

Int. Cl.[3] **A61L** *00/00*

U.S. Cl. 433—173 **6 Claims**



1. An endodontic implant for stabilizing a tooth which comprises a smooth non-threaded partially tapered shank having first and second ends, and a crown portion of circular cross-section integral with said first end of the shank, the shank comprising two tapered sections separated by a section of constant diameter, the first tapered section having a length of substantially 3 mm and tapering from the crown portion towards said constant diameter section and the second tapered section tapering from said constant diameter section towards said second end of the shank, the second tapered section having a length of substantially 16 mm and tapering constantly along its length such that its diameter where it meets said constant diameter section is substantially 0.3 mm greater than its diameter at said second end; the shank being adapted for implantation in a root canal of a tooth stump and being of a length such that the second tapered section passes through the apex of said root canal into the adjacent jawbone of a patient, whereby the tooth may be immobilized for supporting in a rigid manner an artificial tooth crown or a means for supporting a denture, the tapers of the implant shank being such that when implanted in the root canal of a tooth the whole of the root canal cavity is occupied by the shank.

4,283,177

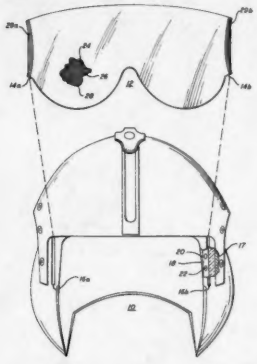
VISION LOSS SIMULATOR

Gerald J. Kron, Binghamton, and Timothy E. Ha'e, Vestal, both of N.Y., assignors to The Singer Company, Binghamton, N.Y.

Filed Mar. 5, 1979, Ser. No. 17,645

Int. Cl.[3] **G09B** *9/08*

U.S. Cl. 434—59 **28 Claims**



1. Apparatus for simulating vision loss in a subject, comprising:

(a) an optical element for use within the field of view of the subject which has a range of variable optical transmission characteristics;

(b) first means for varying at selectable locations the optical transmission characteristics of said optical element; and

(c) second means for monitoring the line of sight of an eye of the subject and providing an output signal representative of said line of sight; and

(d) control means responsive to said second means for controlling according to a predetermined schedule said first means to produce a dynamic pattern of said optical transmission characteristics in said optical element by the application of a control parameter at selected locations therein, said pattern being defined with respect to the instantaneous line of sight of at least one eye of the subject, whereby the visual effects associated with vision loss are simulated for the subject.

4,283,178

ELECTROMECHANICAL BRAILLE CELL

James F. Tetzlaff, Woodside, Calif., assignor to Telesensory Systems, Inc., Palo Alto, Calif.

Filed Jul. 2, 1979, Ser. No. 53,991

Int. Cl.[3] **G09B** *21/00*

U.S. Cl. 434—114 **6 Claims**

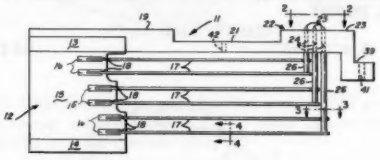
1. In an electromechanical braille cell having a plurality of braille indicia:

reed means comprising a stack of piezoelectric reeds cantilevered from a support structure for bending movement about a fulcrum at the support structure in response to the application of an operating voltage to respective ones of said piezoelectric reeds;

sensing rod means for mechanical operative association with respective ones of said reed means for selective movement of respective ones of said rod means along the direction of

elongation of said rod means in response to bending movement of respective ones of said reed means;

reading means having a plurality of openings therethrough intersecting with a braille reading surface to be scanned by the fingers of the braille reader to define a braille character, respective ones of said rod means being operative within respective ones of said openings in said reading means and for being elevated in one operative position above the surface of said reading surface to be sensed by the fingers of the reader and for retraction relative to said elevated position in another operative position; and



each of said reed means being relatively broad having a pair of opposed broad faces and a pair of narrow side faces and being stacked with their respective broad faces in mutually opposed relation and with a plurality of said reed means having their free end portions extending beyond the terminus of a plurality of said other ones of said reed means, and at least one of said reed means having an opening extending therethrough from one broad face to the other to accommodate passage therethrough of one of said rod means.

4,283,179

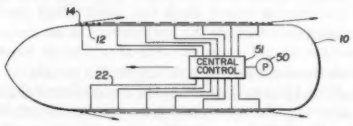
DETACHABLE JET PROPULSION UNIT FOR WATER CRAFT AND METHOD OF CYCLIC PROPULSION

Allan L. Tarr, P.O. Box 521, Marion, Va. 24534

Filed Aug. 22, 1979, Ser. No. 68,776

Int. Cl.³ B63H *11/00*

U.S. Cl. 440—38 **6 Claims**



1. A method of propelling a water craft having a plurality of propulsion units mounted one behind the other on the exterior hull of said water craft between the bow and stern thereof, each of said propulsion units comprising:

(a) a base, a first side of which is shaped to conform closely to the exterior of the hull of the water craft, said base containing a plenum for water maintained at high pressure;

(b) first means for introducing water at a high pressure into the plenum in said base;

(c) a plurality of jet nozzles carried by said base on a second side thereof opposite from the first side, said nozzles being in fluid communication with the plenum in said base; and

(d) second means for detachably mounting said base on the exterior hull of the water craft,

said method comprising the step of cyclically introducing water at high pressure into said propulsion units sequentially from the bow to the stern of the water craft, whereby a rippling effect of the water expelled through said jet nozzles is achieved.

3. A detachable jet propulsion unit adapted to be externally mounted on the hull of a water craft without piercing the hull of the water craft, said propulsion unit comprising:

(a) a base generally in the shape of a rectangular parallelepiped, said base having a first side which is shaped to conform closely to the exterior hull of a water craft and a second side which is spaced from said first side to define a plenum for water maintained at high pressure, the dimension of said base between said first and second sides being small relative to the other dimensions;

(b) first means for introducing water at a high pressure into the plenum in said base;

(c) a plurality of jet nozzles carried by said base on the second side thereof, said nozzles being in fluid communication with the plenum in said base;

(d) channelization means in the plenum in said base to guide water from said first means to said nozzles; and

(e) second means for detachably mounting said base on the exterior hull of the water craft.

4,283,180

BELT DRIVE FOR A WINDING MACHINE AND A PULLEY FOR GENERATING A PERIODICALLY CHANGING DRIVE SPEED

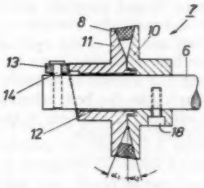
Friedbert Rohner, Kukenthalstrasse 12 a, D-8630 Coburg, Fed. Rep. of Germany

Filed May 15, 1979, Ser. No. 39,140

Claims priority, application Fed. Rep. of Germany, Jul. 14, 1978, 2830944

Int. Cl.³ F16H *55/52*

U.S. Cl. 474—8 **10 Claims**



1. A belt drive for a winding machine comprising

a rotatable shaft;

a V-shaped pulley belt for driving said shaft;

a divided self-adjusting pulley mounted on said shaft, said pulley including a first disc fixed to said shaft for rotation therewith, said first disc having a conical surface of a given angle on one side receiving an edge of said pulley belt for rotation therewith and a second disc mounted on said shaft for free relative rotation therewtih and for relative axial movement, said second disc having a conical surface of an angle different from said given angle on a side facing said first disc receiving an opposite edge of said pulley belt for rotation therewith;

cam means for reciprocating said second disc axially to said shaft during relative rotation of said discs to move said belt radially of said discs and to change the speed of said shaft; and

means for driving said belt to rotate said discs at a differential speed relative to each other.

4,283,181

HYDRAULIC BELT TENSIONER CONSTRUCTION

Nolte V. Sproul, Canton, Ohio, assignor to Dyneer Corporation, Westport, Conn.

Filed Jul. 18, 1979, Ser. No. 58,362

Int. Cl.³ F16H *7/12*

U.S. Cl. 474—110 **12 Claims**

1. A hydraulic belt tensioner construction for use with the hydraulic system of a vehicle for automatically tensioning an endless belt of the drive system for the vehicle accessories, said construction including:

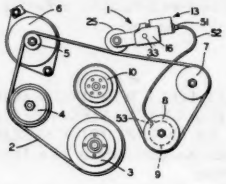
(a) a hydraulic cylinder having a chamber formed therein, and a piston slidably mounted in said chamber, said cylin-

der being adapted to be fixedly mounted with respect to the drive belt;

(b) bellcrank means pivotally mounted directly on the cylinder, said bellcrank means having first and second levers, each with an extended end, with said first lever end being engaged by the piston for imparting pivotal movement to the bellcrank means upon actuation of said piston;

(c) idler pulley means rotatably mounted on the second lever end and engageable with the endless belt to apply tension thereto;

(d) means connecting the cylinder to the hydraulic system of



the vehicle for automatically supplying hydraulic fluid to the cylinder chamber for slidably moving the piston out of said chamber and into engagement with the first lever end; and

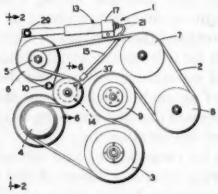
(e) check valve means formed integrally within the hydraulic cylinder for automatically controlling the flow of hydraulic fluid into and out of the cylinder chamber to provide the entire belt tensioning force by maintaining a constant predetermined amount of pressure on the piston and, correspondingly, on the belt, whether the vehicle engine is on or off, and to provide a shock-absorbing damping effect for the idler pulley.

4,283,182

HYDRAULIC BELT TENSIONER CONSTRUCTION

Derald H. Kraft, Canton, Ohio, assignor to Dyneer Corporation, Westport, Conn.

Filed Aug. 3, 1979, Ser. No. 63,205
Int. Cl.³ F16H *7/12*
U.S. Cl. 474—110 **19 Claims**



1. A hydraulic belt tensioner construction for automatically tensioning an endless belt of the drive system for vehicle accessories, in which one of the vehicle accessories is pivotally mounted with respect to the vehicle engine and operatively engaged with and driven by the endless belt, said tensioner construction including:

(a) self-contained hydraulic fluid supply and pump means adapted to be mounted in a fixed position with respect to the vehicle engine;

(b) an idler pulley drivingly engaged with the fluid supply and pump means for actuation of said pump means upon rotation of said pulley, with said pulley being adapted to be operatively engaged with and driven by the endless drive belt; and

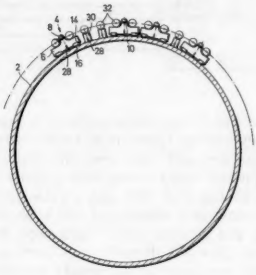
(c) piston means operatively connected to the fluid supply and pump means for hydraulic actuation of said piston means, said piston means being adapted to be operatively engaged with the vehicle accessory for pivotally moving said accessory to tension the drive belt engaged therewith upon actuation of the pump means by the idler pulley.

4,283,183

CHAIN WHEEL SYSTEM

Wolfgang Janzen, Wilnsdorf, and Ludger Frenker-Hackfort, Herkersdorf, both of Fed. Rep. of Germany, assignors to Amsted-Siemag Kette GmbH, Betzdorf-Sieg, Fed. Rep. of Germany

Filed Apr. 25, 1979, Ser. No. 33,383
Claims priority, application Fed. Rep. of Germany, May 10, 1978, 2820284
Int. Cl.³ F16H *55/12*
U.S. Cl. 474—162 **14 Claims**



1. Chain wheel system comprising a drum having a circumferential periphery, tooth blocks secured to the circumferential periphery of said drum, a mating chain for engagement with said tooth blocks for driving said drum, said mating chain having spaced means for engaging said tooth blocks and driving said drum, wherein the improvement comprises that said tooth blocks are screwed to the circumferential periphery of said drum, said tooth blocks have a length in the circumferential periphery of said drum corresponding to at least one spacing of said spaced means, each said tooth block has a tooth crest located intermediate the ends thereof in the circumferential direction of said drum, the side of said tooth block facing said drum having a pair of grooves therein parallel to the axis of said drum, spacers fastened to the circumferential periphery of said drum and fitted into said grooves in said tooth block for adjusting the radially outer dimension of said tooth blocks relative to the axis of said drum, said spacers having a height dimension in the radial direction of said drum at least equal to the depth of said grooves into said tooth block, and said spacers are each of equal height and compensate for the difference between the diameter of said drum and the diameter required for a whole number of said tooth blocks.

4,283,184

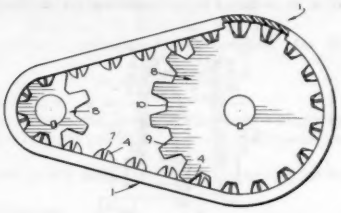
NON-METALLIC SILENT CHAIN

Winfred M. Berg, East Rockaway, N.Y., assignor to Winfred M. Berg, Inc., East Rockaway, N.Y.

Filed Apr. 30, 1979, Ser. No. 34,554
Int. Cl.³ F16G *1/28*
U.S. Cl. 474—203 **5 Claims**

1. A composite drive chain for coupling with toothed sprockets comprising the combination of an elongated unitary molded plastic body portion, projecting flanges at the two opposite edges of said plastic body portion, spaced sprocket engaging teeth extending outwardly from said plastic body portion, said sprocket engaging teeth having rounded sprocket engaging surfaces at their outer ends, said sprocket engaging teeth being spaced from both of said flanges and having a height above said plastic body portion substantially greater than the height of said flanges, a plurality of metallic cables

embedded longitudinally in said plastic body portion at said flanges, and said sprocket engaging teeth having central outwardly flared lateral slots and extending a substantial portion of the height of the sprocket engaging teeth for providing a resilient fit with the sprocket teeth.

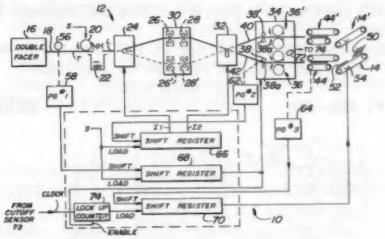


4,283,185

STACKER CONVEYOR RUN SEPARATION CONTROL

A. Brent Woolston, Palmyra, and Donald J. Evans, Cherry Hill, both of N.J., assignors to Molins Machine Company, Inc., Cherry Hill, N.J.

Filed Oct. 9, 1979, Ser. No. 82,846
Int. Cl.³ B31B *1/16*
U.S. Cl. 493—15 **10 Claims**



1. A method of creating a separation between box blanks transported on a stacker conveyor wherein said box blanks are cut by a cut-off machine from a moving web previously severed into leading and trailing portions, comprising:

detecting the leading edge of said trailing portion of said severed web at said cut-off machine,

detecting the trailing edge of the first box blank cut from said trailing portion of said severed web at a first position relative to said stacker conveyor,

detecting the trailing edge of said first box blank at a second position on said stacker conveyor, and

retarding movement of said first box blank relative to said stacker conveyor in response to said detecting steps.

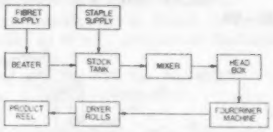
4,283,186

METHOD OF FORMING CIGARETTE FILTER MATERIAL

Charles H. Keith, Charlotte, and Richard O. Tucker, Locust, both of N.C., assignors to Celanese Corporation, New York, N.Y.

Division of Ser. No. 730,039, Oct. 6, 1976, abandoned. This application Aug. 28, 1978, Ser. No. 937,229
Int. Cl.³ B01D *27/00*
U.S. Cl. 493—42 **3 Claims**

1. A method of producing a cigarette filter rod comprising preparing a coherent self-supporting filter sheet material of cellulose ester staple fibers having from about 5% to about 35% of cellulose ester fibrets incorporated therein, said filter sheet material having a surface area in excess of 1 square meter per gram, folding said filter sheet material into a rod-like form



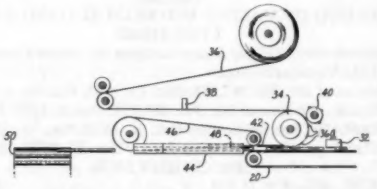
and then securing the folded sheet in rod-like form by means of a wrapping strip.

4,283,187

APPARATUS FOR FORMING COMPOSITE RODS

Desmond W. Molins, and Michael J. Soborowski, both of London, England, assignors to Molins Limited, London, England

Filed Apr. 25, 1978, Ser. No. 900,003
Claims priority, application United Kingdom, Apr. 30, 1977, 18187/77
Int. Cl.³ A24C *5/50*
U.S. Cl. 493—48 **18 Claims**

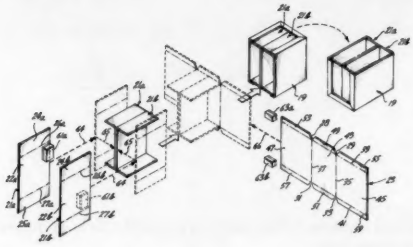


1. Apparatus for forming composite filter rods, comprising conveyor means for moving a stream of axially aligned component filter portions in predetermined sequence on an axial path; means for assembling predetermined groups of filter portions from said stream; means for feeding said groups of filter portions forward at predetermined intervals; means for conveying a continuous wrapper; means for severing said wrapper into separate wrapper portions; means synchronised with said feeding means for applying at least one wrapper portion while one group of said predetermined groups of filter portions is being conveyed axially so that each of the junctions between component portions of a group of filter portions is spanned by a wrapper portion; and means for wrapping and sealing said at least one wrapper portion around said group of filter portions to unite it into a composite filter rod, said severing and applying means being arranged so that no wrapper portion spans more than one of said groups so that said groups are converted into a series of separate composite filter rods while moving in an axial direction.

4,283,188
H-SECTION CARTON FORMING MACHINE

Conrad C. Wingerter, and J. Thomas Bassett, both of Yakima, Wash., assignors to Marq Packaging Systems, Inc., Yakima, Wash.

Filed Apr. 13, 1979, Ser. No. 29,633
Int. Cl.³ B31B *7/02, 7/26*
U.S. Cl. 493—89 **28 Claims**



1. An H-section carton forming machine for forming an H-section carton from two section blanks and a main body blank, said H-section carton forming machine comprising:

(A) section forming means for forming two section blanks into U-shapes and affixing the backs of the cross-members of the U-shapes together to form an H-section, said section forming means comprising:

(1) first glue means for applying glue to one surface of the portions of said section blanks that define the cross-members of said U-shapes;

(2) pickoff means for moving said two section blanks past said first glue means; and,

(3) bending and attaching means for bending said two section blanks into U-shapes and pressing the cross-members of the U-shapes together; and,

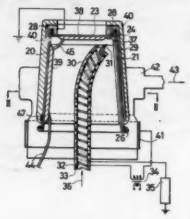
(B) combining means for wrapping a main body blank around said H-section.

4,283,189
METHOD OF MAKING AND SEAM SEALING A PAPER CONTAINER

Tsutomu Itoh, Tokyo, Japan, assignor to Onoda Cement Co., Ltd., Yamaguchi, Japan

Division of Ser. No. 967,988, Dec. 11, 1978, Pat. No. 4,211,339, which is a division of Ser. No. 858,738, Dec. 8, 1977, Pat. No. 4,168,676. This application Dec. 10, 1979, Ser. No. 101,872
Claims priority, application Japan, Dec. 13, 1976, 51-148728
Int. Cl.³ B31B *17/74*
U.S. Cl. 493—109 **2 Claims**

1. The method of making a paper container resistant to liquids consisting of paper material having a non-paper laminate forming an inner facing, said container including one sheet for the sidewall and a second sheet for the bottom, forming said one sheet into said sidewall and overlapping its ends to form a vertical seam, forming a downwardly extending peripheral lip on said bottom sheet and wrapping the bottom portion of said one sheet about said lip to form a bottom peripheral seam, said method including the steps of generating an electric field adjacent said sidewall at and aligned with the vertical seam and also at and aligned with the bottom peripheral seam and on both sides of said lip, causing said electric field to extend through said sheets between their inner and outer faces, providing adjacent said inner face at both said side and bottom peripheral seams powder of a substance capable of adhering to the laminate of the inner facing, charging said powder to have a polarity to be attracted to and deposited on said laminate at

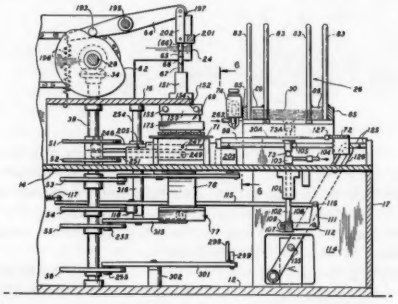


each of said seams in the effective area of said electric field, heating said powder sufficiently to cause it to flow and adhere to said laminate to form a moisture-tight seal at each of said seams.

4,283,190
METHOD FOR FORMING PAPER BOXES AND THE LIKE

Donald F. Williams, 15 W. Mason St., Santa Barbara, Calif. 93102, and Charles L. Phy, Rte. 2, Box 143, McEwen, Tenn. 37101

Division of Ser. No. 786,955, Apr. 12, 1977, Pat. No. 4,194,441. This application Jan. 30, 1980, Ser. No. 116,897
Int. Cl.³ B31B *9/26*
U.S. Cl. 493—131 **10 Claims**



1. A method for forming a box having a bottom, side flaps, and end flaps with inner and outer portions, the method including the steps of inserting a box blank in the path of a forming head, impelling the blank by means of the forming head to traverse a former matrix bending the side flaps and end flaps with respect to the bottom into a tray configuration, securing the side flaps to the end flaps, doubling the end flaps to overlap the inner and outer portions of each end flap, distorting the overlapped end flaps into a concave non-planar configuration with respect to the tray, and adhering the portions of each of the distorted flaps together.

4,283,191

PREPARATION FOR SHRINKPROOFING WOOL

Götz Koerner; Friedhelm Nickel, and Günter Schmidt, all of Essen, Fed. Rep. of Germany, assignors to Th. Goldschmidt AG, Essen, Fed. Rep. of Germany

Filed Mar. 19, 1980, Ser. No. 131,781

Claims priority, application United Kingdom, Mar. 23, 1979, 10341/79

Int. Cl.[3] D06M *3/02*

U.S. Cl. 8—128 A 12 Claims

1. A preparation for shrinkproofing wool comprising:

(a) 1 to 50 weight percent of organopolysiloxanes consisting of

(a_1) 90 to 99.8 mole percent of units having the formula

R_2^1SiO, and

(a_2) 0.2 to 10 mole percent of units having the formula

$R^2SiO_{1.5}$

in which R^1 and R^2 are composed of

0.1 to 10 mole percent of polyoxyalkylene substituents and a wool substantive substituent selected from the group consisting of

0.03 to 3 mole percent of mercaptoalkyl or mercaptoaryl substituents;

0.06 to 6 mole percent of aminoalkyl substituents, and

0.1 to 10 mole percent of anionic groups, which are linked to silicon atoms through carbon atoms,

the remaining portions of R^1 and R^2 groups being methyl groups, up to 10 mole percent of which may be replaced by alkyl substituents of longer chain length, by aryl substituents or by hydrogen atoms, while at the same time up to 5 mole percent of the oxygen atoms, which are linked to silicon, may in each case be replaced by two lower alkoxy or hydroxy terminal groups, and

(b) 50 to 99 weight percent of water.

4,283,192

N-SUBSTITUTED SHORT CHAIN CARBOXAMIDES AS ANTISTATIC AGENTS FOR LAUNDERED FABRICS

Robert A. Bauman, New Brunswick, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Filed Nov. 26, 1979, Ser. No. 97,467

Int. Cl.[3] D06M *13/40;* C11D *3/32;* B08B *3/00*

U.S. Cl. 8—137 12 Claims

1. An antistatic composition for laundering fabrics comprising about 2–25% by weight of a carboxamide antistatic agent substituted on the nitrogen atom and having the formula:

RNHCOR'

wherein R is a secondary aliphatic hydrocarbon chain containing at least 8 carbons and R' is a hydrogen or an alkyl group containing 1–3 carbons, and a detergent selected from the group consisting of anionic, nonionic, cationic, ampholytic and zwitterionic detergent materials.

4,283,193

PROCESS FOR DYEING CELLULOSE MATERIALS WITH REACTIVE DYESTUFFS BY THE EXHAUSTION METHOD

Dietrich Hildebrand, Odenthal, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Mar. 20, 1980, Ser. No. 132,053

Claims priority, application Fed. Rep. of Germany, Apr. 7, 1979, 2914111

Int. Cl.[3] D06P *3/66, 5/00*

U.S. Cl. 8—400 8 Claims

1. Process for dyeing cellulose fibres and textile materials containing cellulose fibres with water-soluble reactive dyestuffs by the exhaustion method, characterised in that it is carried out using dye liquors, the particular fibre-reactive dyestuff content of which is less than 10% of the total content of fixed dyestuff in the end dyeing.

4,283,194

BRUSHED STRETCH DENIM FABRIC AND PROCESS THEREFOR: INDIGO DYEING

Edward W. Teague, Raleigh; Max H. Hance, Coats, and Carl R. Neal, Mooresville, all of N.C., assignors to Burlington Industries, Inc., Greensboro, N.C.

Filed Aug. 20, 1979, Ser. No. 68,277

Int. Cl.[3] C09B *7/00*

U.S. Cl. 8—494 15 Claims

1. An improved indigo dyeing process comprising the steps of preparing an aqueous solution of a completely reduced indigo dye, caustic and hydrosulfite having an oxidation reduction potential ranging from about 850 mv to about 1200 mv, forming a dye bath and heating the dye bath to a temperature within the range of about 130° F. to about 190° F., and while maintaining a substantially constant level of indigo dye concentration and substantially the desired oxidation reduction potential of the aqueous solution, immersing a relatively dry cellulose-containing textile product into the aqueous solution for a period of time sufficient to substantially penetrate the textile product.

4,283,195

DYESTUFF COMPOSITION FOR DYEING OR PRINTING CELLULOSE FIBER MATERIALS

Kiyoharu Nakatsuka, and Sadaharu Abeta, both of Toyonaka, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Jan. 7, 1980, Ser. No. 109,856

Claims priority, application Japan, Feb. 13, 1979, 54/15788; Nov. 13, 1979, 54/147505

Int. Cl.[3] D06P *67/02;* C09B *62/00*

U.S. Cl. 8—524 7 Claims

1. A dye composition containing C.I. Reactive Blue 19 and an alkylnaphthalenesulfonic acid/formaldehyde condensate, the sulfonation degree and average condensation degree of said condensate being 50 to 150% and 1.1 to 3.0, respectively.

4,283,196

PROCESS FOR COLORING FIBER MATERIALS WITH AZO DYESTUFF CONTAINING $-SO_2CH_2CH_2OSO_3H$ AND $-N(CH_2CH_2OSO_3H)_2$ GROUPS

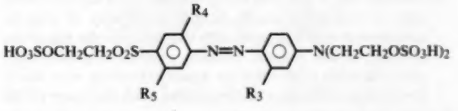
Johann Wenghoefer, E. Greenwich; Dennis G. Messier, W. Greenwich, and James E. Thompson, Coventry, all of R.I., assignors to American Hoechst Corporation, Somerville, N.J.

Division of Ser. No. 65,791, Aug. 13, 1979, Pat. No. 4,271,072, which is a continuation of Ser. No. 862,317, Dec. 20, 1977, abandoned. This application Oct. 27, 1980, Ser. No. 200,726

Int. Cl.[3] D06P *3/82;* C09B *62/00, 29/01*

U.S. Cl. 8—531 5 Claims

1. A process for coloring a fiber material selected from the group consisting of cellulose, natural or synthetic polyamides and mixtures thereof, comprising applying to said fiber material a water soluble dyestuff which, in the form of the free acid, has the formula:



wherein R_3 is halogen and R_4 and R_5 are each independently selected from hydrogen, methyl, ethyl, methoxy, and ethoxy, and fixing said dyestuff on said fiber material by the action of an alkaline agent.

4,283,197

PROCESS FOR WHITENING POLYESTER FIBRES BY THE EXHAUST METHOD

Willy Schürings, Basel; Italo Anceschi, Muttenz, and Gerhard Reinert, Allschwil, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Mar. 17, 1980, Ser. No. 130,949

Claims priority, application Switzerland, Mar. 29, 1979, 2919/79

Int. Cl.³ C09K *11/06*

U.S. Cl. 8—638 **10 Claims**

1. A process for whitening polyester fibres by the exhaust method by treating said fibres in an aqueous dispersion containing one or more fluorescent whitening agents for polyester which have affinity for the substrate and are stable under the application conditions, and a small amount of a blue or violet disperse dye, or a mixture thereof, as shading dye, which process comprises carrying out the treatment in said dispersion at a pH value above 9.

4,283,198

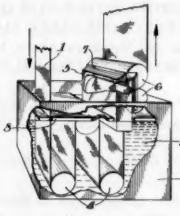
INERT ATMOSPHERE INDIGO DYEING

John M. Fletcher, Rte. 3, Box 376, Opelika, Ala. 36801

Filed Jan. 11, 1980, Ser. No. 111,337

Int. Cl.³ C09B *7/00*

U.S. Cl. 8—653 **5 Claims**



1. In the continuous process of dyeing cellulosic fibers with indigo wherein said fibers are passed through a train of dip vats each having a squeeze roll assembly and bath liquor comprising leuco indigo, sodium hydrosulfite and sodium hydroxide, the improvement wherein at least a part of the air-liquor interface is enclosed whereby enclosed air is depleted of oxygen by reaction with the components of the bath liquor.

4,283,199

METHOD OF RESOLVING BIOLOGICAL SOLUTIONS

Elek I. Szabo, Brighton, Mass., assignor to Forsyth Dental Infirmary for Children, Boston, Mass.

Filed Aug. 20, 1979, Ser. No. 67,947

Int. Cl.³ B01D *15/00, 15/08;* **G01N** *31/06, 33/48*

U.S. Cl. 23—230 B **14 Claims**

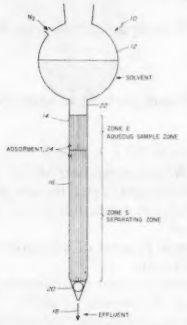
1. A one-step method for the extraction and separation of an aqueous complex solution of biological origin into all of its constituent fractions in a single column, which method comprises:

(a) introducing a predetermined volume of an aqueous solution of biological origin, having a plurality of organic compounds and inorganic salts therein, into the top of the column, which column contains a water-adsorbent support material, to provide an upper extraction zone and a lower separation zone in the column, with the water of the solution adsorbed onto the support material to form the extraction zone;

(b) introducing into the top of the column successive predetermined volumes of solvents as eluants, the solvents of selected and sequentially increasing polarity to pass the solvents through the extraction zone to form, below the lower aqueous boundary layer of the extraction zone, a chromatographic separation zone in the column;

(c) adsorbing the water of the aqueous solution onto the support material in the extraction zone and sequentially extracting in the extraction zone, by the successive volumes of solvents through liquid partitioning, discrete, moving, solute fractions of increasing polarity;

(d) directly introducing the successive solute fractions into the lower separation zone from the upper extraction zone, to provide for the chromatographic resolution of the



solute fractions into solute-eluant fractions of increasing polarity in the separation zone, the solution of the solute fractions initially occurring by chromatographic adsorption and later with solute fractions of increasing polarity, resolution of the solute fractions by liquid-partition chromatography; and

(e) removing the resolved eluant fractions of defined increasing polarity from the lower portion of the separation zone, thereby providing for the simple, effective and quantitative extraction and resolution of the solution into eluant fractions.

4,283,200

METHOD AND APPARATUS FOR DETECTING CORROSION IN STEAM TURBINE INSTALLATIONS

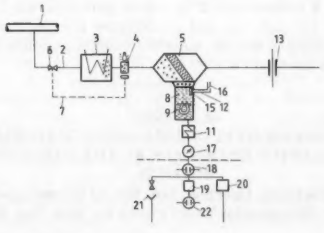
Maurice A. Bodmer, Nussbaumen, and Robert Svoboda, Wettingen, both of Switzerland, assignors to BBC Brown, Boveri & Co. Ltd., Baden, Switzerland

Filed Nov. 1, 1979, Ser. No. 90,250

Claims priority, application Switzerland, Nov. 9, 1978, 115241/78

Int. Cl.³ G01N *17/00*

U.S. Cl. 23—230 C **17 Claims**



1. A method of detecting the occurrence of corrosion in a steam turbine during operation, comprising the steps of:

continuously withdrawing a representative sample of working steam from the turbine;

condensing a portion of the working steam sample to form a condensate;

controlling the quantity of said working steam sample which is condensed such that a predetermined percentage of the sample is condensed;

separating the condensate from the remaining steam;
determining the quantity of the remaining steam;
continuously testing the condensate for corrosivity; and
returning the remaining steam to the turbine.

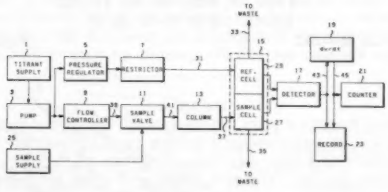
7. An apparatus for detecting corrosion in a steam turbine during operation comprising:
first line means for continuously withdrawing a representative sample of working steam from the steam turbine at a predetermined point in the steam turbine;
condenser means for condensing a portion of the steam sample received through the first line means to form a condensate;
separator means for separating the condensate from the remaining steam;
testing means for continuously testing the condensate for corrosivity;
second line means for returning the remaining steam to the turbine;
a flow meter for determining the quantity of remaining steam arranged in the second line means; and
control means for controlling the quantity of said working steam sample which is condensed such that a predetermined percentage of the sample is condensed.

4,283,201

METHOD AND APPARATUS SUITABLE FOR REPEATED, ACCURATE CHEMICAL ANALYSES

Donald D. DeFord, Glenview, Ill.; Edwin K. Clardy, and Edward N. Fuller, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Nov. 2, 1979, Ser. No. 90,838
Int. Cl.³ G01N *1/14, 31/08, 31/16, 35/08*
U.S. Cl. 23—230 A **29 Claims**



BLOCK DIAGRAM COLUMN TITRATION APPARATUS

1. A method for effecting a repeated chemical analysis of a process stream which comprises establishing a first flow of a stream of a first reactant into a reaction zone, retaining in said zone first reactant entering said zone, continuing said first flow until there is established in said zone a quantity of first reactant sufficient to effect in said zone a reaction therewith and with a second reactant when the latter has entered said zone, then momentarily discontinuing said first flow and simultaneously initiating a second flow of a predetermined quantity of said second reactant into said zone, then immediately upon the termination of said second flow recommencing said first flow, removing reaction product from said reaction zone, and determining at least one of the amount of and nature of reaction product thus formed and removed from said zone.

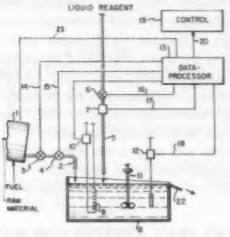
4,283,202

METHOD AND APPARATUS FOR BURNING $CACO_3$ AND $MGCO_3$ MATERIALS

J. Friis-Hansen, 77 Vigerslev Alle, DK-2500 Valby Copenhagen, Denmark

Filed May 4, 1979, Ser. No. 36,230
Claims priority, application United Kingdom, May 8, 1978, 18227/78
Int. Cl.³ G01N *33/38, 27/00*
U.S. Cl. 23—230 A **21 Claims**

1. A method for controlling burning of materials selected from $CaCO_3$, $MgCO_3$ and mixtures thereof in a kiln comprising burning in a kiln; feeding a flow of burnt material and a flow of liquid reagent, in an aqueous solution, to a reaction chamber; maintaining a residence time less than the time required to reach equilibrium in the reaction chamber and maintaining a substantially constant temperature in the reaction chamber; agitating said burnt material and liquid reagent; measuring the temperature and feed rate of said two flows fed



to the reaction chamber; measuring the temperature of said agitated burnt material and liquid reagent; determining reactivity, a measure of the amount of heat per unit weight burnt material per unit of time liberated by reaction between said burnt material and said liquid reagent; and using said reactivity as a control parameter for said burning of $CaCO_3$ and $MgCO_3$ materials.

4,283,203

PETROLEUM FUEL COMPOSITION CONTAINING AN ANTI-HAZE ADDITIVE

Abraham A. Zimmerman, Summit, N.J., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation of Ser. No. 886,721, Mar. 15, 1978, abandoned. This application Apr. 4, 1980, Ser. No. 137,423
Int. Cl.³ C10L *1/18*
U.S. Cl. 44—62 **25 Claims**

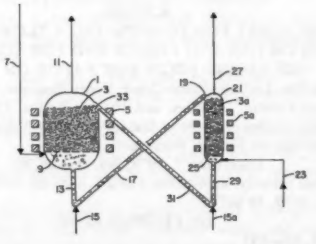
1. A fuel composition comprising a major amount of gasoline and from about 1 to about 30 ppm by weight of an anti-haze additive selected from the group consisting of an hydroxylated resin acid and a metal resinate salt wherein said metal is selected from the metals of Group II to IV, VII and VIII of the Mendeleev periodic table.

4,283,204

PROCESS FOR THE SEPARATION OF CONTAMINANTS FROM FEED STREAMS USING MAGNETIC BEDS

David W. Savage, Summit, N.J., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 73,481, Sep. 7, 1979, abandoned. This application Sep. 2, 1980, Ser. No. 182,937
Int. Cl.³ B01D *50/00*
U.S. Cl. 55—3 **16 Claims**



1. In a process for the selective separation of contaminants from a mixture in a feedstream containing the same within an external force field, said process comprises the steps of:
(a) adsorbing a portion of said contaminants from said feedstream by contacting said feedstream with a bed compris-

ing adsorbent particles capable of adsorbing said contaminants from said feedstream; and

(b) desorbing at least a portion of said contaminant from said adsorbent particles in step (a) to regenerate at least a portion of said adsorbent particles;

the improvement which comprises:

(1) providing a magnetizable component with said adsorbent particles and applying a magnetic field to said magnetizable component and adsorbent particles along the direction of said external force field and at a strength sufficient to prevent and/or suppress gross solids back-mixing and fluid by-passing;

(2) expanding or levitating said adsorbent particles and magnetizable component by countercurrently contacting said adsorbent particles and magnetizable component with said feedstream; and

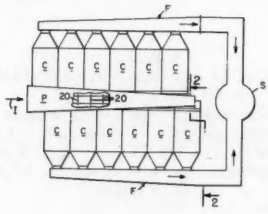
(3) carrying out said adsorption and desorption steps at substantially the same pressure.

4,283,205

INLET FLUE SYSTEM FOR BANKS OF ELECTROSTATIC PRECIPITATOR CHAMBERS

John L. Schumann, 150 Queens Dr. South, Little Silver, N.J. 07739

Filed Apr. 6, 1979, Ser. No. 27,938
Int. Cl.³ B03C *3/00*
U.S. Cl. 55—128 **13 Claims**



1. An inlet flue system for conducting particulate-containing gases to the inlet nozzles of a multiplicity of electrostatic precipitator chambers comprising an elongated plenum located generally above and laterally of the nozzles and associated precipitator chambers and having top and side walls and being substantially entirely open at the bottom, the bottom being essentially free of upwardly facing horizontal or substantially horizontal surfaces where particulates might settle out and collect, and a generally downwardly directed branch duct leading from the bottom of the plenum directly to each inlet nozzle for substantially downward flow of the gases directly to the respective inlet nozzles without substantial settlement and collection of particulates in the plenum or ducts, the inlet end of the perimeter walls of each branch duct defining an outlet opening from the plenum.

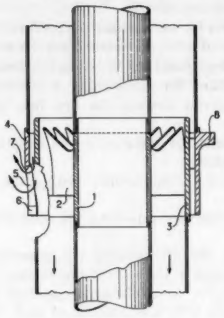
4,283,206

COMPONENT FOR DE-SPINNING A FLOW OF DRY VAPOR OR GAS AND LIQUID AND FOR SEPARATING THE LIQUID FROM THE VAPOR OR GAS

Jean Andro, La Celle Saint-Cloud; Roger Bessouat, Paris; Jean-Pierre Cerdan, Houilles, and Patrick Talleu, Chatou, all of France, assignors to Stein Industrie, Velizy-Villacoublay and Electricite de France, Paris, both of, France

Filed May 7, 1979, Ser. No. 36,701
Claims priority, application France, May 12, 1978, 78 14213; Apr. 6, 1979, 79 08783
Int. Cl.³ B01N *45/04*
U.S. Cl. 55—187 **7 Claims**

1. A component for de-spinning a flow of dry vapour or gas and for separating liquid from vapour or gas, said component including concentrically, in inverse order, an outer vertical tube for admission of the vapour or gas and liquid mixture to be separated and travelling in a downward spinning flow, a coaxial inner tube for collecting dry vapour or gas, and an inner sleeve, said inner and outer tubes being cylindrical of circular cross-section, means positioned between the inner tube and said inner sleeve for de-spinning the flow of said dry vapour or



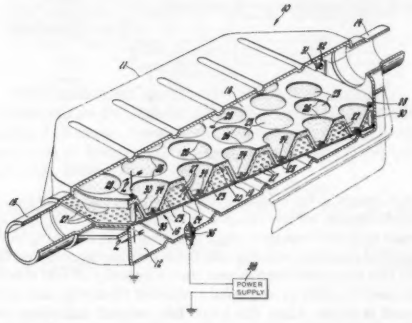
gas, the lower edge of the outer tube being separate from the inner tube and at a level lower than that of the upper edge, and said lower edge of said outer tube being provided with upwardly extending orifices circumferentially spaced on its periphery, whose width decreases upwards.

4,283,207

DIESEL EXHAUST FILTER-INCINERATOR

Ernest T. Martyniuk, Troy, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Jun. 19, 1980, Ser. No. 161,032
Int. Cl.³ B01D *46/24, 46/42*
U.S. Cl. 55—282 **5 Claims**



1. In a particulate trap for collecting and burning combustible particulates, the combination comprising

a high temperature electrically insulative filter medium positioned across a gas flow path and capable of collecting on an upstream facing surface substantial amounts of electrically conductive combustible particulates borne by gas passed through the filter medium and capable of defining a current flow path between spaced points on said surface,

means for applying between said spaced points of the filter medium surface a sufficient electric voltage to cause an arc-like current to pass through collected conductive particulates on said filter surface between said spaced points,

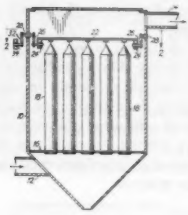
whereby substantial collections of combustible particulates on the filter surface are removed by incineration and electrical power is consumed by the apparatus only during the incineration of particulates.

4,283,208

FILTER BAG CLEANING SYSTEM

James U. R. Fernando, Wellsville, N.Y., assignor to The Air Preheater Company, Inc., Wellsville, N.Y.

Filed May 12, 1980, Ser. No. 149,099
Int. Cl.[3] B01D *46/04*
U.S. Cl. 55—304 3 Claims



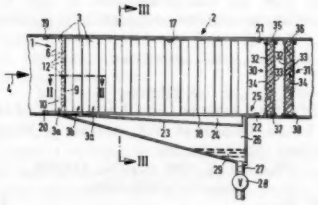
1. Filtration apparatus for removing entrained dust particles from a gas stream comprising a housing having an inlet port for dust entrained gas and an outlet port for the exhaust of clean gas therefrom, an apertured tube sheet intermediate the inlet and outlet ports arranged to divide the housing into inlet and outlet sections, a plurality of porous filter bags each having an open end and a closed end with the open end thereof attached to the tube sheet around each aperture thereof to permit the flow of clean gas therethrough while retaining dust particles on the surface of the filter, cleaning means for said filter bags comprising a linear force electromagnetic motor having oppositely extending slider rods connected to said filter bags so as to move horizontally to shake each filter bag, a source of electric current connected to the linear force motor, and means for controlling the current being supplied to the linear force motor to modulate the frequency and amplitude of movement of the slider rods to vary the cleaning effect of said cleaning means.

4,283,209

SEPARATOR FOR SEPARATING OUT PARTICLES OF FATTY SUBSTANCES FROM A GAS CURRENT, MORE SPECIFICALLY FROM WASTE AIR FROM KITCHENS, AND A WASTE AIR DUCT FOR THE SEPARATOR

Markus Schmalhofer, 8351 Aholming, Bundesrepublik Deutschland, Fed. Rep. of Germany

Filed Feb. 6, 1979, Ser. No. 9,973
Claims priority, application Fed. Rep. of Germany, Jul. 26, 1978, 2832864
Int. Cl.[3] B01D *50/00;* F24C *15/20*
U.S. Cl. 55—325 15 Claims



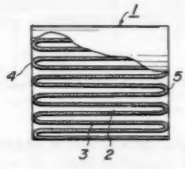
1. A separator for removing fatty or oily particles from a current of waste gas, comprising: a frame having an inlet open end and an outlet open end, and a plurality of rods mounted in the frame substantially parallel to each other and over at least the full cross-section of the frame in rows extending normal to the longitudinal axis of the frame between said inlet end and said outlet end, each rod configured to define a trough facing opposite the inlet open end and spaced apart by a distance at most twice the breadth of an individual rod, wherein the rods of one row are staggered with respect to the rods of the adjacent rows and the spacing between diagonally adjacent rods is at least approximately equal to the spacing between the rods in each row and wherein each rod comprises means for controlling the flow of waste gas through the separator to effect the flow of waste gas into the trough thereof comprising at least one elongated hole extending along the longitudinal axis of the rods in a wall of the trough.

4,283,210

CERAMIC HONEYCOMB FILTER AND A METHOD OF PRODUCING THE SAME

Shigeru Mochida, Kasugai, and Takayuki Ogasawara, Konan, both of Japan, assignors to NGK Insulators, Ltd., Nagoya, Japan

Filed Jul. 14, 1980, Ser. No. 167,747
Claims priority, application Japan, Jun. 16, 1980, 55-080109
Int. Cl.[3] C04B *21/00*
U.S. Cl. 55—523 7 Claims



1. A ceramic honeycomb filter consisting of a porous ceramic honeycomb structural body having a large number of channels extending therethrough, wherein given channels at one of the opening end surfaces of the honeycomb structural body have sealing portions formed by bending and bonding thin partition walls forming the opening end portion of the channels, and the remaining channels have sealing portions formed by bending and bonding thin partition walls forming another opening end portion of the channels.

3. A method of producing ceramic honeycomb filters, comprising bending and bonding thin partition walls of given channels at one of the opening end surfaces of a ceramic honeycomb structural body having a large number of parallel channels extending therethrough to seal the channels while the honeycomb structural body still has plasticity, bending and bonding thin partition walls of the remaining channels at another opening end surface of the body to seal the remaining channels, and firing the above treated honeycomb structural body.

4,283,211

POWER GENERATION BY EXCHANGE OF LATENT HEATS OF PHASE TRANSITION

Stefan Ehrlich, Columbus, Ohio, and William L. Levenson, Beaver Falls, Pa., assignors to Levor, Incorporated, New Brighton, Pa.

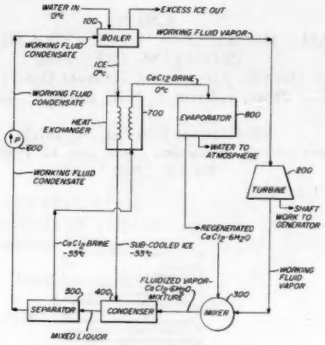
Filed Apr. 9, 1979, Ser. No. 28,720
Int. Cl.[3] F25D *5/00;* F01K *25/08;* F25C *1/00*
U.S. Cl. 62—4 13 Claims

1. A self sustaining process of recovery of the heat content of water and of fresh water therefrom, and of conversion of said heat content to available kinetic energy, the said process comprising:

bringing water existing in a state selected from the group consisting of saline water, brackish water and contaminated water into heat-exchange contact at a temperature of at least 0° C. with a liquid working fluid having a boiling point below 0° C. and thereby boiling the working fluid under autogenous pressure and freezing the water to form ice consisting of frozen fresh water;

releasing the so-vaporized working fluid from said autogenous pressure in an expansion engine and thus expanding adiabatically the said vaporized fluid, cooling the same and converting heat absorbed from the water into available kinetic energy;

withdrawing the expanded and cooled working-fluid vapor from said engine and condensing the vapor by heat-exchange contact with a eutectic composition of a eutectic-forming substance and the ice formed in the first-said



heat exchange less product ice fi m the first-said heat exchange, washing the same with an increment of melt, and recovering the remainder as fresh water; and

pumping the so-condensed working fluid into heat-exchange contact with an additional quantity of water in a selected state and against the said autogenic vapor pressure of the working fluid at substantially the water temperature.

4,283,212

TREATMENT OF GAS STREAMS

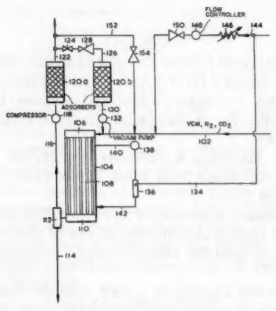
David J. Graham, Diseworth, and John W. Armond, Buckhurst Hill, both of England, assignors to BOC Limited, London, England

Filed Apr. 6, 1979, Ser. No. 27,588

Claims priority, application United Kingdom, Apr. 7, 1978, 13820/78

Int. Cl.[3] **F25J** *3/00*

U.S. Cl. 62—18 **3 Claims**



1. A method of treating a gas mixture comprised of a carrier gas and a minor fraction of vinyl chloride monomer comprising the steps of:

(a) passing said gas mixture in heat exchange relation with a refrigerant in a condensation device to condense at least a part of the vinyl chloride monomer;

(b) recovering condensed vinyl chloride monomer from the condensation device;

(c) supplying the non-condensed portion of said gas mixture from the condensation device to an adsorption unit;

(d) preferentially adsorbing vinyl chloride monomer from the non-condensed gas mixture in the adsorption unit;

(e) desorbing the adsorbed vinyl chloride monomer from the adsorption unit;

(f) passing said desorbed, vinyl chloride monomer to said condensation device thereby increasing the concentration of said vinyl chloride monomer in said condensation device and reducing the refrigeration required to condense a given amount of said vinyl chloride monomer; and

(g) continuously adding nitrogen gas to the gas mixture upstream of the addition of desorbed vinyl chloride monomer to the gas mixture.

4,283,213

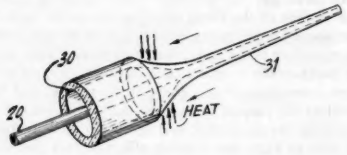
METHOD OF FABRICATION OF SINGLE MODE OPTICAL FIBERS OR WAVEGUIDES

Francis I. Akers, and Mokhtar S. Maklad, both of Roanoke, Va., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Oct. 22, 1979, Ser. No. 86,856

Int. Cl.[3] **C03C** *25/02*

U.S. Cl. 65—3 A **15 Claims**



1. A method for fabricating an optical fiber comprising the steps of:

forming a first solid glass preform having a central core region of a first diameter, a cladding layer surrounding said core and a substrate layer surrounding said cladding layer,

heating and drawing said first solid preform into a first fiber having a core of a second diameter smaller than said first diamater,

collapsing a glass tube about said first fiber by heat shrinking to form a second solid preform having a core of the second diameter,

heating and drawing said second solid preform into a second fiber having a core of a third diameter substantially smaller than the second diameter of said first fiber, whereby said second fiber is capable of single mode operation.

4,283,214

GOB FEED DIAL FOR DUAL GLASS BASE MACHINE

Phillip A. Livera, Bloomfield, N.J., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Feb. 8, 1980, Ser. No. 119,684

Int. Cl.[3] **C03B** *7/08*

U.S. Cl. 65—70 **10 Claims**

1. The method of delivering insulating glass to a lamp base making machine comprising the steps of:

repetitively severing a continuous stream of molten glass into gobs of uniform weight and size with a continuously rotating dial having a plurality of apertures in the upper surface thereof;

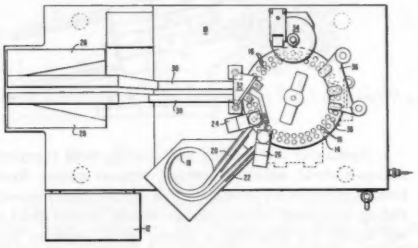
forming said gobs of uniform weight and size into a ball-like shape while conveying said gobs sequentially to a pair of radially different discharge locations, a first of said radi-

ally different discharge locations being spaced the same radial distance from the center of said dial as said plurality of apertures in said upper surface and the other of said radially different discharge locations being radially outward of said first radially different discharge location; and

blowing air into said apertures in the upper surface of said rotating dial when discharging said ball-like gobs from said rotating dial at said pair of radially different discharge locations.

5. An apparatus for forming and delivering insulating glass to a lamp base making machine, said apparatus comprising:

a circular dial having top and bottom surfaces and a plurality of chambers therein, each of said chambers having an opening in said top and bottom surfaces, said openings in said top surface of said dial being located on a first circular locus radially equidistant from the center of said dial, said openings in said bottom surface being alternately located on said first circular locus and on a second circular locus



which is radially equidistant from the center of said dial but being a greater distance from the center of said dial then said first circular locus;

a dial support having a wear plate mounted to the top thereof and a central aperture through said dial support and said wear plate;

a dial drive shaft extending through said aperture in said dial support and said wear plate having said dial mounted thereon for rotation therewith;

glass stream receiving means positioned over said first locus on said dial for receiving and directing a continuous stream of glass into said openings in said top surface of said dial, said wear plate being constructed and arranged to close off the openings in said bottom surface of said dial for a portion of the rotation thereof thereby containing said insulating glass within said chambers for a portion of said rotation. With the intersection of said openings in said bottom surface and an edge of said wear plate defining a pair of glass discharge locations.

4,283,215

TWO-PIECE BOTTOM PLATE FOR MAKING CROWN BOTTOM GLASSWARE ON THE HE-28 MACHINES

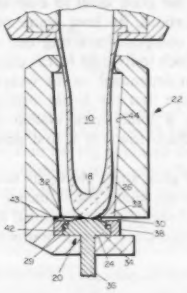
James E. Sherman, Temperance, Mich., assignor to Owens-Illinois Inc., Toledo, Ohio

Filed Dec. 20, 1977, Ser. No. 862,270

Int. Cl.³ C03B *9/197, 9/335*

U.S. Cl. 65—79 **7 Claims**

5. A method of forming blown drinking glasses having a crowned bottom comprising the steps of: forming a hollow molten glass parison having a thick bottom section, placing the parison in a paste mold having a two-piece bottom plate assembly, rotating the parison about a vertical axis while allowing it to sag into partial contact with the glass contacting surfaces of a domed central member and a surrounding annular member of said bottom plate assembly while said domed member is in a retracted position relative to said annular member, advancing said domed member vertically so as to bring its glass contacting surfaces into full contact with said parison, engaging an abutment on said annular member with a corresponding abutment on said central member, advancing both of said bottom plate members upwardly in unison, thereby bringing the glass contacting surfaces of said annular member into full contact with said parison, blowing the hollow parison into its finished



shape during the advancement of said domed member, lowering the bottom plate assembly and removing the blown drinking glass.

4,283,216

PRODUCING GLASS SHEETS OF REQUIRED CURVED SHAPE

Paul A. Brereton, Birmingham, England, assignor to Triplex Safety Glass Company Limited, Birmingham, England

Filed Dec. 10, 1979, Ser. No. 102,228

Claims priority, application United Kingdom, Dec. 11, 1978, 47920/78

Int. Cl.³ C03B *23/03*

U.S. Cl. 65—106 **28 Claims**

1. A method of producing a curved glass sheet, comprising suspending a hot glass sheet at forming temperature at a series of gripping locations spaced along the upper margin of the sheet, subjecting the hot glass sheet to individual forces at those gripping locations, at least some of which individual forces have components out of the plane of the sheet and which individual forces each have a magnitude and direction dependant on the weight and shape of the glass, to ensure that the freely suspended hot glass sheet adapts towards a predetermined curved shape as the magnitudes and directions of the forces vary during the change of shape of the glass, and permitting the magnitudes and directions of the forces to vary so that the influence of the total force system acting on the sheet in changing the shape of sheet diminishes as the sheet approaches the predetermined curved shape.

19. A method of producing a curved glass sheet, comprising the steps of:

(a) suspending a flat glass sheet at a series of gripping locations spaced along the upper margin of the sheet;

(b) subjecting the glass sheet to individual forces at those gripping locations, at least some of which individual forces have components acting out of the plane of the sheet and which individual forces each have a magnitude and direction dependant on the weight and shape of the glass to ensure that the freely suspended glass sheet is subjected to a total force system initially seeking to change its shape towards a first predetermined curved shape;

(c) heating the glass sheet above its strain point to permit change of shape under the influence of said total force system which includes gravitational forces acting on the sheet to a shape close to said first predetermined curved shape;

(d) permitting the magnitudes and directions of said individual forces to vary so that the influence of the total force system acting on the sheet in changing the shape of the sheet diminishes as the sheet approaches said first predetermined curved shape;

(e) applying shaped bending dies to the hot glass sheet to bend the sheet to a second predetermined curved shape;

(f) releasing the dies to allow the bent sheet to become freely suspended; and

(g) submitting the bent glass sheet to further thermal treatment including cooling the sheet to a temperature at which the sheet is sufficiently stiffened for its shape to be unaffected by any forces acting at the gripping points, within a time period which is sufficiently short to render negligible any shape changes occurring in the period.

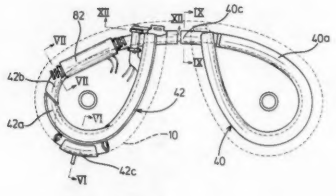
4,283,217
METHOD OF FORMING A SHAPED FLUORESCENT LIGHT BULB ENVELOPE

Osamu Kawamura, Koganehara No. 2-13-13, Matsudo-Shi, Chiba-Ken, Japan

Continuation of Ser. No. 798,014, May 18, 1977, abandoned. This application Aug. 31, 1979, Ser. No. 71,185

Int. Cl.³ C03B *29/00*

U.S. Cl. 65—108 **5 Claims**



1. A method of forming a shaped fluorescent light bulb comprising the steps of supporting a tubular envelope blank of defined length at each of its ends within a respective holder, heating said elongated envelope blank to a degree permitting the bending of the ends with respect to its central portion, maintaining one of said holders in stationary position and moving the other of said holders relative to said one holder in a planetary path of approximately 250° with respect to the stationary holder by which the associated ends of said tubular envelope blank are turned in the same direction, relatively inward in opposition to each other and are directed toward said center portion and out of the plane of the center portion, continuing the movement of said other holder until the ends of said tubular envelope blank at least in part overly the center portion, are symmetrical and lie at least in part parallel to each other, removing said envelope blank from said holders and thereafter installing electrical connectors to each end and sealing said envelope blank to form a light bulb.

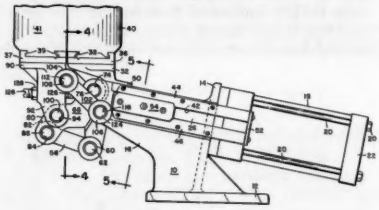
4,283,218
MOLD MECHANISM

Warren D. Staley, Painted Post, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Feb. 11, 1980, Ser. No. 120,329

Int. Cl.³ C03B *9/40, 11/16*

U.S. Cl. 65—360 **9 Claims**



1. Apparatus for opening and closing mold segments of a two-part mold which comprises, support means, first mold mounting means for retaining a first mold segment mounted for sliding movement on said support means, second mold mounting means for retaining a second mold segment pivotally mounted with respect to said support means, means for reciprocally moving said first mold mounting means linearly along said support means for opening and closing said mold mounting means, pivotal link means connecting said first mold mounting means to said second mold mounting means and said second mold mounting means to said support means for pivotally opening and closing said second mold mounting means simultaneously with and in response to the sliding linear opening and closing of said first mold mounting means for opening and closing the mold segments carried by said mold mounting means; and said pivotal link means including central pivot link means for pivotally connecting said second mold mounting means to said support means, and lower link means connecting said first mold mounting means to said central pivot link means for rotating said central pivot link means about a pivot on said support means and simultaneously pivoting said second mold mounting means into an open or closed position in response to the linear movement of said first mold mounting means along said support means by said moving means.

4,283,219
AGROCHEMICAL AGENTS AND THEIR USE

Kuno Wagner; Johannes Niggemann, both of Leverkusen; Kurt Findeisen, Odenthal, and Hans Scheinpflug, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Aug. 3, 1979, Ser. No. 63,602

Claims priority, application Fed. Rep. of Germany, Aug. 18, 1978, 2836155

Int. Cl.³ C05C *9/00*

U.S. Cl. 71—28 **34 Claims**

1. A method of supplying plants with nutrients comprising applying to the plants or a plant habitat a composition comprising as active ingredient a stabilized reaction product of (a) an azulmic acid with (b) a nitrogen-containing aminoplast-forming agent and a carbonyl compound or with a condensation product of said aminoplast-forming agent and said carbonyl compound.

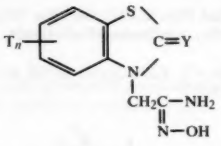
4,283,220

IMIDAMIDES DERIVED FROM 2-OXO-3-BENZOTHIAZOLINE ACETIC ACID PLANT GROWTH REGULANTS

John J. D'Amico, Olivette, and John T. Marvel, St. Louis, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Aug. 23, 1979, Ser. No. 68,993
Int. Cl.³ A01N *43/28*
U.S. Cl. 71—90 **14 Claims**

1. A method of regulating the growth of leguminous plants which comprises applying to the plant locus a plant growth regulating effective amount of a compound having the formula



wherein T is halogen or trifluoromethyl, n is 0,1 or 2 and Y is oxygen or sulfur.

4,283,221

PLANT GROWTH REGULATING AGENT

Christian Vogel, Binningen, and Rudolf Aebi, Basel, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

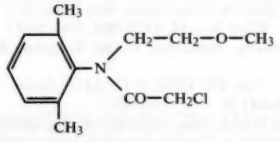
Continuation-in-part of Ser. No. 548,041, Feb. 7, 1975, abandoned, which is a continuation-in-part of Ser. No. 328,202, Jan. 31, 1973, abandoned. This application May 21, 1976, Ser. No. 688,868

Claims priority, application Switzerland, Feb. 7, 1972, 1739/72; Feb. 16, 1972, 7203/72

The portion of the term of this patent subsequent to Feb. 10, 1993, has been disclaimed.

Int. Cl.³ A01N *37/22*; C07C *103/32*
U.S. Cl. 71—118 **4 Claims**

1. The compound 2-chloro-2',6'-dimethyl-N-(2-methoxyethyl)-acetanilide of the formula



4,283,222

EMULSIFIABLE CONCENTRATE FOR WEED CONTROL

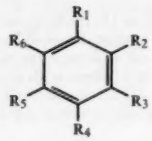
Fumio Horide, Osaka, and Kozo Tsuji, Fukazawahonmachi, both of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Continuation-in-part of Ser. No. 67,457, Aug. 17, 1979, abandoned. This application May 20, 1980, Ser. No. 151,576

Claims priority, application Japan, Aug. 29, 1978, 53-106107; Brazil, Aug. 28, 1979, 7905536

Int. Cl.³ A01N *47/30*
U.S. Cl. 71—120 **6 Claims**

1. An emulsifiable concentrate for weed control, consisting essentially of 10 to 20 parts by weight of N'-[4-(4-methylphenethyloxy)phenyl]-N-methoxy-N-methylurea, 5 to 15 parts by weight of an emulsifier, 10 to 70 parts by weight of at least one aromatic hydrocarbon solvent of the formula:



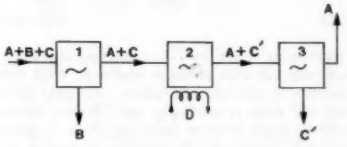
wherein R_1, R_2, R_3, R_4, R_5 and R_6 are each hydrogen or alkyl having 1 to 3 carbon atoms and 15 to 75 parts by weight of at least one ketonic solvent having not more than 9 carbon atoms and having a water solubility of not more than 10% by weight at room temperature, said emulsifier being a mixture of at least one anionic surfactant selected from the group consisting of the calcium or sodium salt of an alkylbenzenesulfonic acid and at least two non-ionic surfactants selected from the group consisting of polyoxyethylene alkyl ether, polyoxyethylene alkyl aryl ether, polyoxyethylene styryl aryl ether, polyoxyethylene styryl aryl ether polymer, polyoxyethylene fatty acid ester, oxyethylene oxypropylene polymer, and mixtures thereof.

4,283,223

PROCESS FOR TREATING SMOKE FROM STEEL PLANTS

Francois Billard, Paris, France, assignor to Air Industrie, Courbevoie, France

Filed Sep. 24, 1979, Ser. No. 78,182
Claims priority, application France, Oct. 9, 1978, 78 28961
Int. Cl.³ C21B *3/04*
U.S. Cl. 75—25 **6 Claims**



1. A method for treating smoke from steel plants, said smoke comprising a carrier gas, iron and iron oxides dust and non-ferrous metals in vapor form, said smoke being at a temperature higher than the vaporization temperature of said non-ferrous metals, said method comprising the following steps, in sequence:

effecting, while the smoke is in the hot state, without noticeable cooling thereof, a first, dry separation between, on the one hand, said iron and iron oxides dust and, on the other hand, said carrier gas mixed with said non-ferrous metals in vapor form;

cooling said carrier gas and non-ferrous metals to a temperature lower than the solidification temperature of the non-ferrous metals so as to produce cooling of said carrier gas and solidification of said non-ferrous metals; and

effecting a second separation, between the cooled carrier gas and the solidified non-ferrous metals.

4,283,224

SEPARATIVE TREATMENT OF ANODE SLIME

Maxson L. Stewart, Bremen, Ga., assignor to Southwire Company, Carrollton, Ga.

Filed May 5, 1980, Ser. No. 146,883
Int. Cl.³ C22B *11/04, 13/04, 25/00*
U.S. Cl. 75—99 **9 Claims**

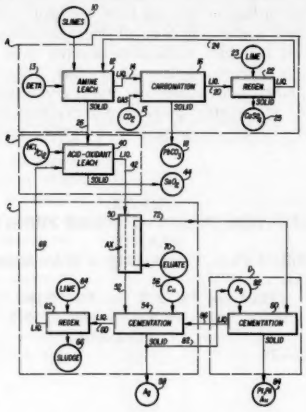
1. A hydrometallurgical process for separative treatment of electrometallurgical anode slime containing substantial amounts of tin and lead, comprising:

(a) providing as a starting material a precious metal-bearing

anode slime having substantial amounts of lead sulfate and tin dioxide;

(b) recovering lead by (1) leaching said slime in an alkylene amine aqueous solution to solubilize said lead sulfate as lead-polyamine-sulfate complexes, said amine being sufficient in amount to combine with the lead present; and (2) after separating said leach solution from undissolved residue, carbonating said solution to precipitate lead carbonate;

(c) recovering tin by leaching the undissolved residue from step (b) in an aqueous solution of hydrochloric acid and chlorine to solubilize substantially all of said residue, including precious metals as anionic chlorine complexes, except tin dioxide; followed by separating the tin dioxide residue;



(d) recovering silver by (1) contacting the leach solution from step (c) with an anion exchange resin substantially selective to platinum, palladium, and gold adsorption to load said resin accordingly; and (2) after separating the depleted leach solution from said resin, cementing silver from said solution by the addition of copper; and

(e) recovering a mixture of platinum, palladium, and gold by (1) elutriating said loaded resin with an aqueous solution of thiourea and hydrochloric acid; then (2) cementing said precious metal mixture from the loaded eluate by the addition of silver from step (d) (2); and (3) after separating the precious metal mixture from the eluate, adding the silver-enriched eluate to the leach solution of step (d) (2) for cementation of silver.

4,283,225

PROCESS FOR FABRICATING HOMOGENEOUS, DUCTILE BRAZING FOILS AND PRODUCTS PRODUCED THEREBY

Peter Sexton, Randolph, and Nicholas J. De Cristofaro, Madison, both of N.J., assignors to Allied Chemical Corporation, Morris County, N.J.

Division of Ser. No. 912,667, Jun. 5, 1978, Pat. No. 4,148,973, which is a continuation of Ser. No. 751,000, Dec. 15, 1976, abandoned. This application Nov. 13, 1978, Ser. No. 959,974

Int. Cl.³ C22C *19/03*

U.S. Cl. 75—170 **3 Claims**

1. A process for fabricating homogeneous, ductile brazing foil composed of metastable material having at least 50 percent glassy structure, said foil having a composition consisting essentially of 0 to about 4 atom percent iron, 0 to about 8 atom percent chromium, 7 to about 15 atom percent boron, 5 to about 10 atom percent silicon and the balance essentially nickel and incidental impurities, wherein the composition is such that the total of iron, chromium and nickel ranges from about 78 to 84 atom percent and the total of boron and silicon ranges from about 16 to 22 atom percent, which process comprises forming a melt of the composition and quenching the melt on a rotating chill wheel at a rate of at least about 10^{5}° C./sec.

3. The product produced according to the process of claim 1.

4,283,226

METHOD OF PREPARING TITANIUM IRON-CONTAINING MATERIAL FOR HYDROGEN STORAGE

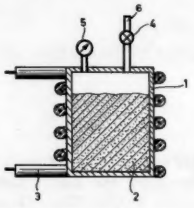
Harmannus H. van Mal; Hendrik A. van Esveld; Johannes S. van Wieringen, and Kurt H. J. Buschow, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 8, 1976, Ser. No. 739,700

Claims priority, application Netherlands, Nov. 11, 1975, 7513159

Int. Cl.³ C22C *30/00, 22/00, 38/12*

U.S. Cl. 75—175.5 **4 Claims**



1. A method of preparing a material for storing hydrogen, comprising the steps of:

fusing titanium and iron, in a mutual ratio in gram-atoms of between 4:1 and 0.67:1, in combination with 5–30 atom % of at least one metal selected from the group consisting of chromium, zirconium and vanadium; and

activating the material obtained by exposing it to a hydrogen atmosphere at ambient temperature.

4,283,227

ZNO—SEO_2—R_2O SOLUBLE GLASS

Cyril F. Drake, Harlow, England, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Sep. 14, 1979, Ser. No. 75,617

Claims priority, application United Kingdom, Sep. 26, 1978, 38222/78

Int. Cl.³ C03C *3/12;* **A61K** *33/04*

U.S. Cl. 106—47 R **6 Claims**

1. A water soluble glass composition adapted to release trace amounts of selenium into an aqueous solution, the composition including a fused mixture of 40 to 60 mol % selenium dioxide (SeO_2) as a glass-forming oxide and 35 to 60 mol % zinc oxide (ZnO) as a glass-modifying oxide as its major constituents and at least one alkali metal oxide as a minor constituent for modifying the selenium release rate, wherein the alkali metal oxide molar concentration is at least as low as 13.1%.

4,283,228

LOW TEMPERATURE DENSIFICATION OF PZT CERAMICS

Relva C. Buchanan, and Dale E. Wittmer, both of Champaign, Ill., assignors to University of Illinois Foundation, Urbana, Ill.

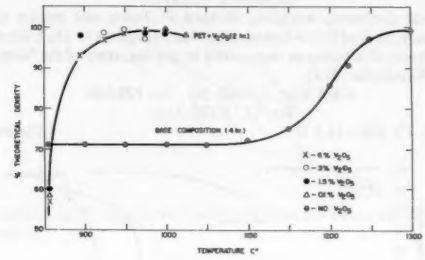
Filed Dec. 5, 1979, Ser. No. 100,340

Int. Cl.³ C04B *35/46, 35/48*

U.S. Cl. 106—73.3 **6 Claims**

1. A fired PZT ceramic composition characterized by a density of at least 98% of theoretical density which composi-

tion consists essentially of a major amount of lead zirconate-lead titanate having the formula $Pb(ZrTi)O_3$ wherein the Zr:Ti



molar ratio ranges from about 65:35 to about 35:65, and from about 0.1 to about 6.0% by weight of V_2O_5.

4,283,229

PROCESS FOR THE PREPARATION AND USE OF STABLE CELLULOSE ETHER SUSPENSIONS

Friedrich Girg, Idstein, and Volker Knittel, Wiesbaden, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Feb. 9, 1979, Ser. No. 10,809
Int. Cl.[3] C04B *13/00;* **C08L** *1/26*
U.S. Cl. 106—171 **5 Claims**

1. In the process for the preparation of a stable aqueous electrolyte-containing cellulose ether suspension, wherein an inherently water-soluble cellulose ether is added, in the form of solid particles, to an aqueous solution of an electrolyte and uniformly distributed therein,

the improvement comprising using a non-ionogenic cellulose ether and adding alumina to the suspension, and wherein the amounts of the components of said suspension are about 0.5 to 40 percent by weight of said non-ionogenic cellulose ether, about 4 to 12 percent by weight of electrolyte and about 0.1 to 10 percent by weight of alumina, calculated on the weight of the electrolyte solution.

4,283,230

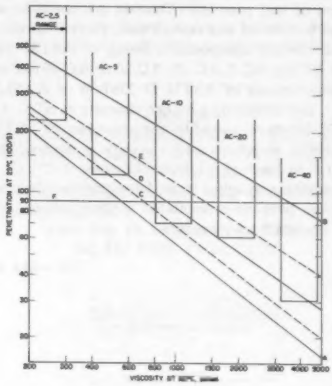
AIR-TREATED PROPANE-PRECIPITATED ASPHALT

Dominick Clementoni, Union, and Luke W. Corbett, Mountainside, both of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Jan. 10, 1980, Ser. No. 111,030
Int. Cl.[3] C08L *95/00*
U.S. Cl. 106—274 **13 Claims**

1. A process for preparing an asphalt cement composition comprising the step of:

blending a propane-precipitated asphalt base, air-treated at elevated temperature and having a softening point of about 65°–300° C. as measured by ASTM D 36-76, with about 5–60 wt.%, based on the total weight of said asphalt base, of a 1–10 wt.% sulfur-treated liquid petroleum fraction having an atmospheric equivalent boiling range, of about 370°–500° C., thereby producing an asphalt cement composition being of ASTM viscosity grade AC-2½, AC-5, AC-10, AC-20 or AC-40 and meeting the requirements of ASTM D 3381-76 or AASHTO M 226-73, and exhibiting a higher viscosity at 60° C., as measured by the procedure of ASTM STP 532 (1973), in which said viscosity is interpolated at a penetration level of 90 decimillimeters at 25° C., than a comparative non-air treated composi-



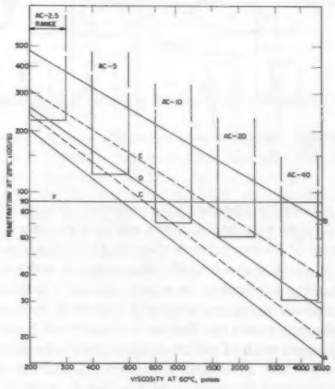
tion derived from the same propane-precipitated asphalt, whose softening point has not been increased.

4,283,231

SULFUR-TREATED PROPANE-PRECIPITATED ASPHALT

Dominick Clementoni, Union, and Luke W. Corbett, Mountainside, both of N.J., assignors to Exxon Research & Engineering Company, Florham Park, N.J.

Filed Jan. 10, 1980, Ser. No. 111,036
Int. Cl.[3] C08L *95/00*
U.S. Cl. 106—274 **17 Claims**



1. A process for preparing an asphalt cement composition comprising the steps of:

(a) heating a mixture consisting essentially of a propane-precipitated asphalt, derived from a residuum of a crude oil, having a gravity of above about 20° API, and 0–60 weight percent, based on the total weight of said asphalt, of a liquid petroleum fraction, having an atmospheric equivalent boiling range of about 370°–500° C., and about 1 to 15 wt.% elemental sulfur, based on the total weight of said asphalt, at a temperature in the range of about 140° to 300° C., until hydrogen sulfide evolution ceases, thereby resulting in a sulfur-treated asphalt base having an increased softening point, compared to that of said propane-precipitated asphalt, and being in the temperature range of about 65°–300° C. as measured by ASTM D 36-76; and

(b) blending said sulfur-treated asphalt base with about 0–60 weight percent, based on the total weight of said asphalt base, of said liquid petroleum fraction, such that the total amount of said petroleum fraction present is about 5–60 weight percent of said asphalt base, thereby producing an asphalt cement composition, being of ASTM viscosity grade AC-2½, AC-5, AC-10, AC-20 or AC-40 and meeting the requirements of ASTM D 3381-76 or AASHTO M 226-73, and exhibiting a higher viscosity at 60° C. (ASTM D 2171-66), as measured by the procedure of ASTM STP 532 (1973), in which said viscosity is interpolated at a penetration level of 90 decimillimeters at 25° C., than a comparative non-sulfur treated composition, derived from the same propane-precipitated asphalt whose softening point has not been increased.

4,283,232

PROCESS AND APPARATUS FOR USE IN TREATING MATERIALS IN HYDROCYCLONES

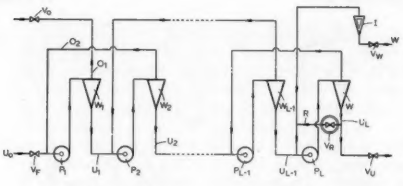
Ijsbrand Best, Bergen, Netherlands, assignor to Wessanen Nederland B.V., Amstelveen, Netherlands

Filed May 23, 1979, Ser. No. 42,601

Claims priority, application United Kingdom, May 24, 1978, 22187/78

Int. Cl.³ C13L *1/00*

U.S. Cl. 127—71 **4 Claims**



1. A process of upgrading a particulate starch product by subjecting it to a counter-current washing process with water in a system of hydrocyclones operating in cascade with introduction of wash water into the final stage, in order to remove contaminating substances, in which process a suspension of a starch product in water containing dissolved contaminants is fed continuously into the first of a plurality of hydrocyclone washing stages each of which operates to discharge an underflow stream and an overflow stream the former of which contains a higher proportion of the starch product particles than the overflow stream; the underflow stream from each stage except the last is pumped directly via a feed line into the next hydrocyclone stage, and the overflow stream from each hydrocyclone stage except the first is introduced into the feed-line to the previous hydrocyclone stage at a point at the inlet side of the pump in that line whereas the overflow stream from the first stage, which stream contains removed contaminants, is removed from the system; the whole series of hydrocyclone stages being operated as a totally enclosed system so that the different stages function interdependently; with the improvement that the final stage underflow stream which contains the washed starch product is in part directly removed from the system and in part recycled directly to that final stage by conducting that part into the feed-line to that stage at the inlet side of the pump in that feed-line.

4,283,233

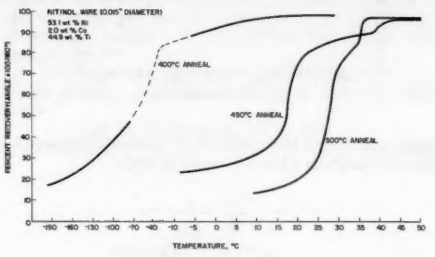
METHOD OF MODIFYING THE TRANSITION TEMPERATURE RANGE OF TINI BASE SHAPE MEMORY ALLOYS

David Goldstein, Adelphia; Richard E. Jones, and Robert S. Sery, both of Silver Spring, all of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 7, 1980, Ser. No. 128,326

Int. Cl.³ C22F *1/10*

U.S. Cl. 148—11.5 R **4 Claims**



1. In the process of forming an article with a shape change memory from a nickel-titanium based shape change memory alloy by annealing the object at a temperature above the transition temperature range (TTR) while the object is restrained in its permanent shape and then reshaping the object into another shape at a temperature below the transition temperature range, the improvement comprising:

determining the annealing temperature which produces the desired transition temperature range for the article by performing the following steps in order:

(1) forming the alloy into the desired permanent shape of the article;

(2) restraining the article in this permanent shape;

(3) annealing the article at a temperature above the TTR;

(4) cooling the alloy down to a temperature below the TTR;

(5) removing the restraint from the article;

(6) forming the article into an intermediate shape taking care not to cause more than 7 percent deformation in the material;

7) determining the TTR by slowly heating up the article and observing the temperature range over which it recovers its permanent shape; and

(8) deciding the next steps as follows:

(a) if the TTR is lower than that desired, steps (2) through (8) are repeated using a higher annealing temperature in step (3);

(b) if the TTR is higher than that desired, steps (1) through (8) are repeated using fresh alloy and a lower annealing temperature in step (3); but

(c) if the TTR is that desired, the annealing temperature last used in step (3) is used in the process.

4,283,234

GAS TURBINE NOZZLE

Yutaka Fukui, and Hiromi Kagohara, both of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 12, 1979, Ser. No. 102,825

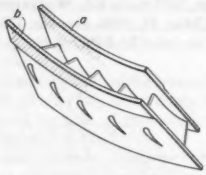
Claims priority, application Japan, Dec. 15, 1978, 53-157234

Int. Cl.³ C22C *19/05*

U.S. Cl. 148—32.5 **13 Claims**

1. A gas turbine nozzle made of a cast material having a chemical composition which consists essentially of 0.2 to 1 wt% carbon, 0.1 to 2 wt% silicon, 0.1 to 2 wt% manganese, 20 to 40 wt% chromium, 0.001 to 0.1 wt% boron, 5 to 20 wt% of

at least one of tungsten and molybdenum and the remainder nickel, said material having a heat-treated structure in which



eutectic carbides and secondary carbides are dispersed in the matrix.

4,283,235

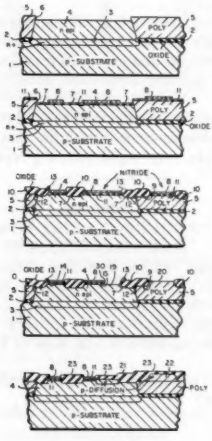
DIELECTRIC ISOLATION USING SHALLOW OXIDE AND POLYCRYSTALLINE SILICON UTILIZING SELECTIVE OXIDATION

Jack I. Raffel, Lexington, and Stephen E. Bernacki, Worcester, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Division of Ser. No. 61,374, Jul. 27, 1979, Pat. No. 4,231,819, which is a division of Ser. No. 773,637, Feb. 28, 1977, Pat. No. 4,184,172, which is a continuation-in-part of Ser. No. 747,743, Dec. 6, 1976, abandoned. This application May 15, 1980, Ser. No. 150,067

Int. Cl.³ H01L *21/20, 21/302, 21/76*

U.S. Cl. 148—175 **7 Claims**



1. A method for achieving isolation of integrated circuits comprising:

depositing a layer of oxide on a silicon substrate leaving open areas on which devices are to be subsequently made over the exposed silicon substrate,

growing simultaneously a layer of polycrystalline silicon on the oxide regions and a layer of epitaxial silicon on the exposed silicon regions of the substrate.

selectively forming a thick oxide layer on the surface of said polycrystalline and said epitaxial silicon layers leaving open those regions of the polycrystalline layer where resistors are to be made and those regions of the epitaxial silicon where junction devices are to be made,

the thickness of the oxide being such that the bottom of the oxide extends below the junction depth of junctions to be subsequently formed in said epitaxial silicon open regions and less than the thickness of the epitaxial layer, and

forming said junction devices in said epitaxial layer open regions,

at least one junction abutting the thick oxide layer beneath the surface of the epitaxial silicon,

whereby said oxide forms an oxide isolation between the junctions and said polysilicon layer surrounding the epitaxial silicon.

4,283,236

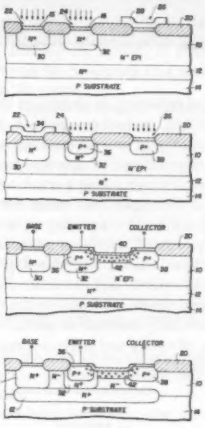
METHOD OF FABRICATING LATERAL PNP TRANSISTORS UTILIZING SELECTIVE DIFFUSION AND COUNTER DOPING

Ramesh M. Sirsi, Indialantic, Fla., assignor to Harris Corporation, Melbourne, Fla.

Filed Sep. 19, 1979, Ser. No. 77,234

Int. Cl.³ H01L *21/22, 21/31*

U.S. Cl. 148—187 **11 Claims**



1. A method of fabricating lateral PNP transistors comprising:

introducing N type impurities into a low impurity concentration N type base region to form high impurity concentration N type base and base contact regions;

introducing P type impurities into said low impurity concentration base region to form P type collector region and into said high impurity concentration base region to form P type emitter region; and

introducing P type impurities into the region between said collector and emitter regions of sufficient concentration to counter dope the low impurity concentration base region between said collector region and said high impurity concentration base region without converting said high impurity concentration base region.

4,283,237

METHOD OF MAKING A GUN PROPELLANT COMPOSITION

Russell Reed, Jr., and Raymond M. Price, both of Ridgecrest, Calif., assignors to Thiokol Corporation, Newtown, Pa.

Continuation-in-part of Ser. No. 329,258, Jan. 17, 1973, abandoned. This application Apr. 3, 1975, Ser. No. 565,428

Int. Cl.³ C06B *45/10*

U.S. Cl. 149—19.91 **14 Claims**

1. The method of making a propellant which comprises preparing an extrudable mixture consisting essentially of a major amount of cyclotetramethylene tetranitramine and a minor amount of a curable binder, said binder comprising at least one alkyl acrylate or alkyl methacrylate of 14 to 24 carbon atoms, a polyacrylate cross-linking agent and a free radical

catalyst, and extruding said mixture into hot water at a temperature sufficient to cure said binder and to form cured pellets of said propellant.

4,283,238

METHOD OF RECONSTITUTING THE EXTERNAL CONDUCTOR OF A COAXIAL CABLE AND CABLE THUS RECONSTITUTED

Patrick Jacquemart, Calais, France, assignor to Les Cables de Lyon, Lyons, France

Filed Jun. 2, 1978, Ser. No. 912,148

Claims priority, application France, Jun. 28, 1977, 77 19743

Int. Cl.³ H02G *1/14;* B21F *15/06*

U.S. Cl. 156—49 **3 Claims**

1. A method of repairing an aluminum outer conductor of a coaxial cable which includes a portion of bared dielectric between two ends of said outer conductor which ends are to be mechanically and electrically connected together, said method of repairing said cable producing a crack resistant mend at said portion of bared dielectric, said mend further having a low impedance, said method comprising (i) winding at least one conductive tape made of aluminum gauze in a helix, the edges of successive turns of said tape overlapping to cover said bared dielectric and said ends of said outer conductor; and (ii) sticking the ends of said conductive tape to the outer conductor by means of an electrically conductive adhesive selected from the group consisting of epoxy and polyester resins having conductive particles added thereto.

4,283,239

BRACING METHOD

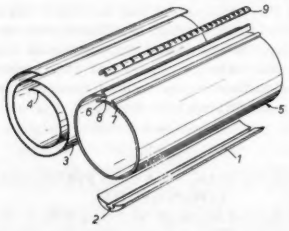
Nicholas T. Corke, Linden, and Christian A. M. Debbaut, Lubbeek, both of Belgium, assignors to N.V. Raychem S.A., Kessel-Lo, Belgium

Filed Feb. 14, 1979, Ser. No. 12,016

Claims priority, application United Kingdom, Feb. 21, 1978, 6906/78

Int. Cl.³ B29C *27/00;* B32B *31/00*

U.S. Cl. 156—85 **21 Claims**



1. A method of bracing a junction between cables which, in use, are pressurized, which comprises the steps of applying to the junction, in the order listed, a first sleeve, a substantially gas-impermeable member, which is subject to distortion by the internal pressure, a reinforcing member comprising a fibrous mat impregnated with a meltable material, and a second, heat-shrinkable sleeve, the reinforcing member being radially inwardly deformable at least at the recovery temperature of the second sleeve, and heating to recover the second sleeve.

4,283,240

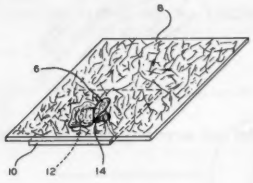
METHOD FOR REPAIRING GRAINED OR EMBOSSED VINYL SHEETING WITH IMPRINTED VINYL MOLDS

Lawrence L. Speer, 7177 State Rd., Wadsworth, Ohio 44281

Filed Mar. 24, 1980, Ser. No. 133,455

Int. Cl.³ B29D *9/00*

U.S. Cl. 156—98 **9 Claims**



1. A method for repairing a damaged area of grained or embossed vinyl sheeting comprising the sequential steps of:

(a) forming an imprinted vinyl mold or matrix of the grained or embossed vinyl sheeting to be repaired;

(b) trimming the edges of the damaged area of vinyl sheeting;

(c) disposing an adhesive backing under the damaged area to form a cavity;

(d) filling the cavity with a vinyl repair compound;

(e) heating the vinyl repair compound with a heat source until the compound is sufficiently soft to accept an imprint but insufficiently soft to cause permanent bonding with the vinyl mold or matrix, or to cause loss of the imprint on the vinyl mold;

(f) placing the relatively cool imprinted vinyl mold in contact with the soft vinyl compound without pressure being applied, so that the mold removably adheres to the compound and the compound accepts the grain of the mold;

(g) allowing the soft compound to cool to about room temperature while in contact with the vinyl mold; and

(h) stripping the vinyl mold from the repair area.

4,283,241

METHOD OF PRODUCING A TIRE FOR A PNEUMATIC TIRE ARRANGEMENT

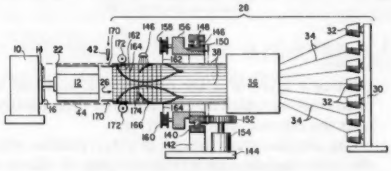
Josef G. Hollmann, Munich, Fed. Rep. of Germany, assignor to Hischmann Technik AG, Zürich, Switzerland

Continuation-in-part of Ser. No. 853,172, Nov. 21, 1977, abandoned. This application Jun. 15, 1979, Ser. No. 48,738

Claims priority, application Fed. Rep. of Germany, Nov. 22, 1976, 2653022

Int. Cl.³ B29H *17/00, 17/26*

U.S. Cl. 156—117 **10 Claims**



1. A method of preparing blanks for radial-ply tires having a predetermined bead core diameter comprising the steps of:

(a) extrusion coating individual, elongated, reinforcing members aligned in a tubular array with a vulcanizable rubber composition;

(b) longitudinally moving the coated members aligned in a tubular array in a common direction while circumferentially spaced about an axis extending in said direction;

(c) interconnecting the moving members by circumferen-

tially extending deformable connecting means, thereby forming a tube about said axis, said tube having a diameter substantially equal to said bead core diameter;
(d) severing said tube into axially consecutive sections;
(e) mounting the tube sections on a building drum;
(f) incorporating bead rings into the axial terminal portions of said sections; and
(g) radially expanding the axially central portion of each section while substantially maintaining the diameter of the axially terminal portions of each section, so as to form a toroidally shaped tire blank;
(h) said deformable connecting means in said axially central portion being circumferentially deformed during said step of radially expanding so that the circumferential distance of said reinforcing members is increased in said axially central portion.

4,283,242

PROCESS FOR CEMENTING SEMICONDUCTOR DISCS ONTO A CARRIER PLATE

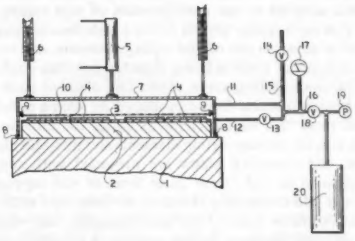
Dieter Regler; Bruno Meissner, and Alfred Moritz, all of Burghausen, Fed. Rep. of Germany, assignors to Wacker-Chemitronic Gesellschaft für Elektronik-Grundstoffe mbH, Burghausen, Fed. Rep. of Germany

Continuation of Ser. No. 884,459, Mar. 8, 1978, abandoned. This application Sep. 7, 1979, Ser. No. 73,415

Claims priority, application Fed. Rep. of Germany, Mar. 22, 1977, 2712521

Int. Cl.³ B32B *31/22*

U.S. Cl. 156—154 **3 Claims**



1. A process for cementing semiconductor wafers temporarily onto a carrier plate of a polishing machine so as to permit semiconductor wafers of relatively different thicknesses to be reliably pressed into a cement layer without the occlusion of air bubbles, and such that the upper surfaces of said wafers extend above the cement layer and lie substantially in the same plane, comprising the steps of:

coating the carrier plate totally with an even layer of cement substance;

applying the wafers to the cement substance on the carrier plate;

placing a vacuum-tight sealing dome over the carrier plate, so as to define a sealed hollow space;

clamping an elastic, chemically-inert diaphragm within said dome 0.2 to 1.5 mm above the free surface of the wafers, said diaphragm dividing the hollow space into two subchambers;

simultaneously evacuating the entire hollow space defined by said two subchambers to a pressure of 10 to 10^{-5} torr;

subsequently applying air pressure in the subchamber between the diaphragm and the top of the dome by venting said space to an outside air source, so that the wafers are pressed by the diaphragm onto the cement layer;

thereafter feeding air pressure to the subchamber between the cement layer and the diaphragm, and, removing the dome from the carrier plate;

allowing said cement layer to set;

polishing said wafers in a polishing machine; and

removing absolutely wave-free wafers from said polishing machine.

4,283,243

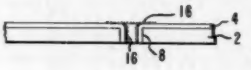
USE OF PHOTOSENSITIVE STRATUM TO CREATE THROUGH-HOLE CONNECTIONS IN CIRCUIT BOARDS

Sam Andreades, Red Bank; Grant A. Beske, Princeton Junction, and John W. Lott, Tinton Falls, all of N.J., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 954,085, Oct. 24, 1978, abandoned, which is a continuation-in-part of Ser. No. 878,878, Feb. 17, 1978, abandoned. This application Mar. 20, 1980, Ser. No. 132,154

Int. Cl.³ B44C *00/00*

U.S. Cl. 156—237 **40 Claims**



1. A method for treating the surface of a through-hole in a substrate in preparation for rendering that surface electroconductive comprising the steps:

(a) laminating a supported plastic photosensitive toner-receptive stratum to a surface of the substrate whereby the through-hole is covered by the supported stratum;

(b) removing the support from the stratum and applying a pressure differential across the stratum by subjecting the stratum to vacuum via the through-hole;

(c) maintaining the pressure differential across the stratum by which the stratum covering the through-hole collapses into the through-hole and adheres to the walls thereof;

(d) optionally exposing the photosensitive stratum imagewise by which selected areas thereof, excluding the areas covering the through-hole, are rendered toner nonreceptive;

(e) applying finely divided metal alloy or plating catalyst to the toner-receptive surface of the collapsed stratum within the through-hole;

(f) optionally hardening or curing the metallized or catalyzed areas;

step-(g) converting the metallized or catalyzed areas to electrically conductive areas and electrically conductive through-holes.

4,283,244

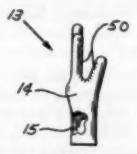
METHOD OF MAKING FABRIC-LINED ARTICLES

Tas Hashmi, Willard, Ohio, assignor to Sherwood Medical Industries Inc., St. Louis, Mo.

Filed Oct. 1, 1979, Ser. No. 80,858

Int. Cl.³ B29B *13/04*

U.S. Cl. 156—242 **23 Claims**



1. A method of making a lined elastomeric article comprising the steps of applying a coating of adhesive in liquid state to an elastomeric article on a form, drying the adhesive on the article, thereafter applying a preformed lining over the article and the adhesive coating to adhesively connect the lining to the article including the steps of employing a lubricant between the adhesive coating and the inner surface of the lining to facilitate applying the lining over the adhesive coating and article, and thereafter drying the lining and the article on the form, and removing the article with the lining from the form to provide the lined elastomeric article.

4,283,245
BOTTLE LABELLING APPARATUS

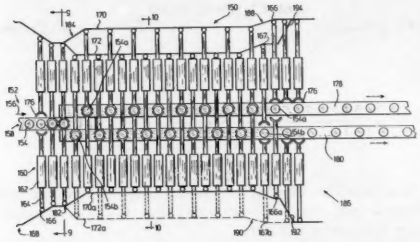
Horst A. Benoit, 510 Richey Crescent, Mississauga, Ontario, Canada (L5G 1N4)

Continuation-in-part of Ser. No. 844,595, Oct. 25, 1977, abandoned. This application Apr. 17, 1979, Ser. No. 30,770

Claims priority, application Canada, Oct. 18, 1977, 288967; United Kingdom, Sep. 29, 1978, 38678/78

Int. Cl.³ B65C *9/02, 9/06*

U.S. Cl. 156—476 **41 Claims**



1. In container conveying apparatus, means for conveying containers, container registration means for evenly spacing such containers on said means for conveying, and means which travels with said means for conveying for individually engaging such containers to maintain container even spacing and shifting such conveyed engaged containers laterally a predetermined extent on said means for conveying.

4,283,246
CONTINUOUS LAMINATING MACHINE

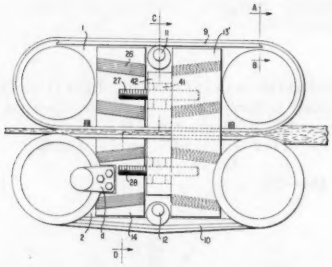
Kurt Held, Alte Strasse 1, D-7218 Trossingen 2, Fed. Rep. of Germany

Filed Jan. 23, 1980, Ser. No. 114,673

Claims priority, application Fed. Rep. of Germany, Aug. 20, 1977, 2737629

Int. Cl.³ B30B *5/06*

U.S. Cl. 156—555 **5 Claims**



1. In a continuous laminating machine for exerting a pressure over an area on a moving panel of material, which machine includes a stationary supporting structure composed of two supporting elements, each supporting element presenting a parallel pair of planar outer faces and semicylindrical outer end faces extending between the planar faces, two steel pressing belts each supported by a respective supporting element and each disposed to press against a respectively opposite side of such a panel in the region of one planar outer face of a respective supporting element for applying such pressure thereto, bearing means providing a rolling bearing between each pressing belt and its respective supporting element, and clamping plates connecting the supporting elements together, the improvement wherein: said bearing means comprise a plurality of cylindrical rolling elements and a plurality of spacer profiles alternating with said rolling elements and provided with arcuate recesses adapted to the configuration of said rolling elements so that each spacer profile forms a slide bearing cup for one side of an adjacent one of said rolling elements, said rolling elements and spacer profiles being disposed between each said pressing belt and its respective supporting element such that the compression reaction forces produced by such a panel are transferred from said rolling elements under the influence of rolling friction to said supporting elements and into said clamping plates; said machine further comprises belt drive means including at least one hollow toothed wheel located in the region of a semicylindrical outer end face of one said supporting element arranged to be driven by a drive source and provided in the region of its periphery with frontal drive teeth; and a lateral edge of one of said steel pressing belts is provided with longitudinally spaced teeth meshing with said frontal teeth for driving said one belt.

4. In a continuous laminating machine for exerting a pressure over an area on a moving panel of material, which machine includes a stationary supporting structure composed of two supporting elements, each supporting element presenting a parallel pair of planar outer faces and semicylindrical outer end faces extending between the planar faces, two steel pressing belts each supported by a respective supporting element and each disposed to press against a respectively opposite side of such a panel in the region of one planar outer face of a respective supporting element for applying such pressure thereto, bearing means providing a rolling bearing between each pressing belt and its respective supporting element, and clamping plates connecting the supporting elements together, the improvement wherein: said bearing means comprise a plurality of cylindrical rolling elements and a plurality of spacer profiles alternating with said rolling elements and provided with arcuate recesses adapted to the configuration of said rolling elements so that each spacer profile forms a slide bearing cup for one side of an adjacent one of said rolling elements, said rolling elements and spacer profiles being disposed between each said pressing belt and its respective supporting element such that the compression reaction forces produced by such a panel are transferred from said rolling elements under the influence of rolling friction to said supporting elements and into said clamping plates; said clamping plates are provided with support surfaces inclined to said planar outer faces of said supporting elements and said supporting elements are provided with support countersurfaces parallel to, and engaging, said support surfaces; and said machine further comprises adjusting means including threaded spindles threadedly engaging said clamping plates for moving said clamping plates in mutually opposite directions in a manner to vary the spacing between said supporting elements over a continuous range.

4,283,247
LIQUID PHASE EPITAXIAL PROCESS FOR MAGNETIC GARNET

Rodney A. Roques, Austin, Tex., and Gene F. Wakefield, Chatsworth, Calif., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jun. 21, 1979, Ser. No. 50,587

Int. Cl.³ C30B *19/02*

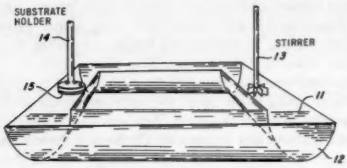
U.S. Cl. 156—601 **3 Claims**

1. A method for the liquid phase epitaxial growth of a crystalline magnetic garnet material on a suitable substrate comprising the steps of:

(a) providing a circulating $P_bO—B_2O_3$ flux solution of a magnetic garnet;

(b) selectively controlling the temperature within separated zones of said solution to provide a first zone maintained at a temperature higher than the saturation point; and a second zone remote from said first zone, maintained at a temperature below the saturation point; and third and fourth intermediate zones wherein said solution is circulated, while cooling, from said first zone to said second zone, and is returned from said second zone to said first zone at increasing temperatures, respectively, each of said zones having a common surface level;

(c) preheating the substrate to a suitable growth temperature;



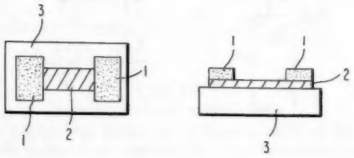
(d) and placing a surface thereof in contact with the surface of said second zone for a time sufficient to deposit an epitaxial layer of said solute material thereon.

4,283,248

ETCHING SOLUTION FOR TIN-NICKEL ALLOY AND PROCESS FOR ETCHING THE SAME

Takeshi Kakuhashi, and Kazuo Fukunaga, both of Ibaraki, Japan, assignors to Nitto Electric Industrial Co., Ltd., Ibaraki, Japan

Filed Feb. 1, 1980, Ser. No. 117,692
Claims priority, application Japan, Feb. 1, 1979, 54-10844; Nov. 26, 1979, 54-152647
Int. Cl.³ C09K *13/06;* C23F *1/00*
U.S. Cl. 156—637 **45 Claims**



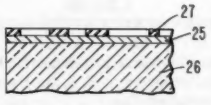
Claim **1** (Amended). A process for etching a tin-nickel alloy which comprises etching the alloy *at a temperature of greater than about 80° C* with a solution containing *at least one phosphoric acid compound selected from the group consisting of* 0.1 mol/*l* or more phosphoric acid, 0.05 mol/*l* or more pyrophosphoric acid, 0.1 mol/*l* or more phosphorous acid, 0.1 mol/*l* or more of a mixture of phosphoric, pyrophosphoric and/or phosphorous acids, molten phosphoric acid, molten pyrophosphoric acid, molten phosphorous acid [or] *and* a molten mixture of phosphoric, pyrophosphoric and/or phosphorous acids.

4,283,249

REACTIVE ION ETCHING

Linda M. Ephrath, Danbury, Conn., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of Ser. No. 35,176, May 2, 1979, abandoned, which is a continuation of Ser. No. 840,085, Oct. 6, 1977, abandoned. This application Aug. 17, 1979, Ser. No. 67,261
Int. Cl.³ H01L *21/306;* B44C *1/22;* C23F *1/00*
U.S. Cl. 156—643 **35 Claims**



1. A method for reactive ion etching an article which comprises a substrate and a surface thereon selected from the group of silicon oxides, silicon nitride, silicon oxynitride, and mixtures thereof which comprises:

positioning the article to be etched on a cathode;

enclosing in a container, the cathode and the surface to be etched;

introducing an etchant gas into said container wherein said gas is a mixture of gaseous fluorocarbon which is capable of supplying CF_3, and a second gas capable of supplying hydrogen selected from the group consisting of hydrogen, NH_4, gaseous saturated aliphatic hydrocarbons, and mixtures thereof, wherein the fluorocarbon is present in an amount sufficient to provide etching of said surface and the second gas is present in an amount sufficient to provide at least about 10% H_2 based on the total molecular flow rate of the gases as measurable by volume per unit time and being sufficient to selectively etch said surface at a greater rate than said substrate without causing polymerization on said substrate, wherein the gases are regulated by individual molecular flow rates prior to mixing together; and

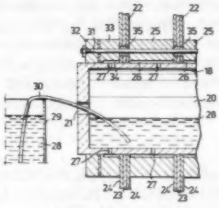
applying an AC potential to the cathode to disassociate the reactive gases and to accelerate chemically reactive etchant gas ions toward said cathode.

4,283,250

SOLUTION-CONCENTRATING APPARATUS

Carl-Hugo Abrahamson, Batmanskroken 5,, S-126 57 Hägersten, and Björn Heed, Utlandagatan 19, S-412 61 Göteborg, both of Sweden

Filed Feb. 6, 1980, Ser. No. 118,911
Claims priority, application Sweden, Feb. 9, 1979, 7901174
Int. Cl.³ B01D *1/24*
U.S. Cl. 159—9 R **7 Claims**



1. An apparatus for concentrating a liquid solution, comprising a plurality of spaced apart plates arranged for rotation about a substantially horizontal axis extending through a centre region of said plates, each of said plates having at least one outer layer comprising an open-pore material having the ability to absorb such solution; means for supplying solution to the surfaces of said plates, said surfaces being arranged to be exposed to heat and/or a flowing gas for the purpose of vapourizing a relatively vapourizable constituent from the solution supplied to said surfaces; and means for collecting concentrated products, wherein the radially inner region of said outer layer extends into a storage space for solution to be concentrated, said storage space being shielded by shielding means from the parts of said outer-surfaces exposed to said heat and/or said gas.

4,283,251

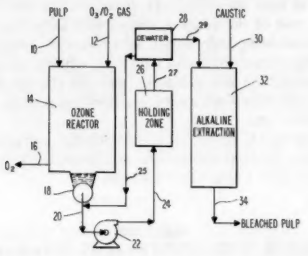
OZONE EFFLUENT BLEACHING

Rudra P. Singh, Brookhaven, Pa., assignor to Scott Paper Company, Philadelphia, Pa.

Filed Jan. 24, 1980, Ser. No. 115,065
Int. Cl.³ D21C *3/26*
U.S. Cl. 162—17 **10 Claims**

1. In a pulp bleaching process employing a sequence of pulp treatments including a gaseous ozone bleaching treatment at a

pulp consistency of from about 20% to about 45% and at an acidic pH followed by an alkaline treatment at a pH above 7 and at a pulp consistency lower than the pulp consistency in the ozone bleaching treatment; wherein the improvement comprises, employing a low consistency acidic retention treatment between the ozone bleaching treatment and the alkaline treatment, said low consistency acidic retention treatment comprising lowering the consistency of the pulp obtained from the ozone bleaching treatment by the addition of water to the pulp to a consistency of 12% or less by weight while maintaining the pulp at an acidic pH, retaining said ozone bleached pulp at said lower consistency and at said acidic pH for a retention



time of at least ten minutes, whereby bleaching of the pulp is achieved during the retention treatment by peroxygen values available in the water associated with the pulp from the ozone bleaching treatment.

2. The process of claim 1 performed continuously and with countercurrent recycle of water obtained by dewatering pulp; comprising removing water from the pulp after said retention time, taking said removed water and combining said water with ozone bleached pulp entering the low consistency acid retention treatment to lower the consistency of the ozone bleached pulp whereby the use of peroxygen and acid values contained in the recycled water is maximized for bleaching pulp in the low consistency acid retention treatment.

4,283,252

METHOD AND APPARATUS FOR PRODUCING FIBER PULP FROM FIBROUS LIGNOCELLULOSE CONTAINING MATERIAL

Rolf B. Reinhall, P.O. Box 3847, Bellevue, Wash. 98009

Continuation of Ser. No. 937,411, Aug. 28, 1978, abandoned, which is a continuation of Ser. No. 777,624, Mar. 15, 1977, abandoned. This application Jun. 17, 1980, Ser. No. 160,253

Claims priority, application Sweden, Mar. 19, 1976, 7603464

Int. Cl.[3] **D21B** *1/14;* **B02C** *23/24*

U.S. Cl. 162—23 **3 Claims**

1. In the method of producing thermo-mechanical pulp in which ligno-cellulose fiber material such as wood chips is disintegrated in a grinding space defined between a pair of grinding discs which rotate relatively to one another under axial pressure within a defibrating housing in a steam environment of superatmospheric pressure and elevated temperature about 100° C., the wood chips being conveyed through the inlet in the grinding housing into a central opening between the grinding discs, from which the material is propelled radially outwards into the grinding space by the centrifugal force created by the rotating discs, the resultant ground pulp material being discharged from the defibrating housing through valve means which are controlled to maintain a predetermined pressure and temperature within the housing, the improvement in said method providing enhanced fibrillation with reduced energy consumption, comprising the steps of:

(a) conveying the wood chips into a passage to the inlet of the grinding space;

(b) compressing and dewatering the chips to a sufficient consistency to form a steam-tight plug at the inlet to said grinding housing to seal the latter against blow-back of pressurized steam into said passage;

(c) advancing said steam-tight plug through said inlet into said central opening at a temperature below 100° C.;

(d) breaking up said steam-tight plug at the grinding disc opposite the incoming plug before propelling the resultant fiber material into the grinding space; and

(e) maintaining the temperature in the radial inner portion of the grinding space up to the softening point of the middle lamella to cause the pulp fiber walls to unravel and separate without any substantial fibrillation thereof as they are propelled through said inner radial portion of the grinding space to be subsequently fibrillated under the generation of high-temperature steam as they are propelled further through an outer radial portion of the grinding space.

4,283,253

METHOD AND APPARATUS FOR PROCESSING FILLING GAS FROM A COKE OVEN BATTERY

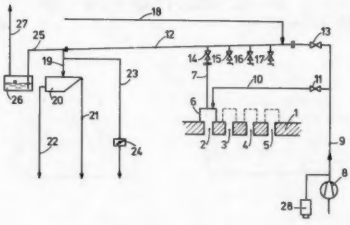
Joachim Polenz, Essen, and Hans Wagner, Kettwig, both of Fed. Rep. of Germany, assignors to Krupp-Koppers GmbH, Essen, Fed. Rep. of Germany

Filed Sep. 18, 1980, Ser. No. 188,281

Claims priority, application Fed. Rep. of Germany, Oct. 24, 1979, 2942962; Dec. 6, 1979, 2949016

Int. Cl.[3] **C10B** *27/04*

U.S. Cl. 201—30 **21 Claims**



1. An improved method for production of coke and by-products comprising

filling with coal a coke oven chamber of a coke oven battery having horizontal chambers and a coke oven gas off-take main;

withdrawing the filling gas generated during coking of said coal generated during filling separately from the coke oven gas;

adding flue gas to the filling gas for rendering the resulting gas mixture of the filling gas and the flue gas relatively inert;

withdrawing said gas mixture through a filling gas conduit fed with flushing liquor withdrawn from the coke oven gas off-take main;

admixing said gas mixture of the filling and flue gas to the raw coke oven gas;

feeding the tar and coal containing flushing liquor coming from said filling gas conduit into a thick tar separator; and

returning the flushing liquor after separation of tar and coal to the flushing liquor coming from the gas off-take main.

4,283,254

METHYLAMINES PURIFICATION BY DISTILLATION AND PURGE

Douglas E. Binau, Charleston, and Emmett J. Speicher, Elkview, both of W. Va., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 3, 1980, Ser. No. 136,998

Int. Cl.[3] **B01D** *3/14;* **C07C** *85/26*

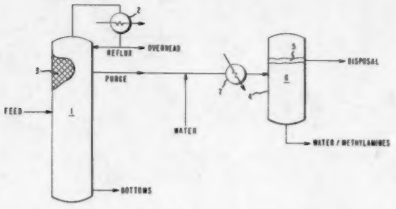
U.S. Cl. 203—4 **5 Claims**

1. In the process of distilling crude methylamines by feeding

crude methylamines into a distillation column wherein methylamines are taken off overhead and a water-rich phase is taken off as bottoms, the improvement comprising

(i) taking a purge from an area in the column where the impurities concentrate, the purge rate being sufficient to avoid a flooding concentration of impurities in the column;

(ii) adding water to the purge creating a water-immiscible



phase containing impurities and a water phase containing methylamines, the amount of water added being sufficient to keep the methylamines content of the water phase below 25% by weight;

(iii) cooling the phases to a temperature below the boiling point of the impurities and aqueous methylamines;

(iv) separating the two phases; and

(v) recycling the water phase for recovery of its methylamines content.

4,283,255

MASS TRANSFER PROCESS

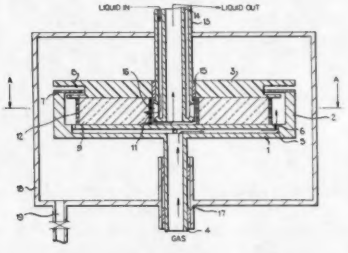
Colin Ramshaw, and Roger H. Mallinson, both of Runcorn, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Nov. 27, 1978, Ser. No. 963,886

Claims priority, application United Kingdom, Dec. 1, 1977, 50072/77

Int. Cl.³ B01D *3/30*

U.S. Cl. 203—49 **13 Claims**



1. A process for effecting mass transfer between two fluid phases, the first of which is a liquid, which process comprises the steps of:

(a) charging the said fluids to an element which has an interfacial area of more than 1500 m^{-1}, is permeable to the fluids and has pores which present a tortuous path to the fluids,

(b) rotating the said element about an axis such that the fluids flow through the said pores with the first fluid flowing radially outwards away from the said axis, and

(c) collecting at least a proportion of one of the fluids discharged from the said element.

4,283,256

METHOD AND APPARATUS FOR MEASURING THE STRENGTH OF THE AIR/FUEL MIXTURE SUPPLIED E.G. TO AN I.C. ENGINE

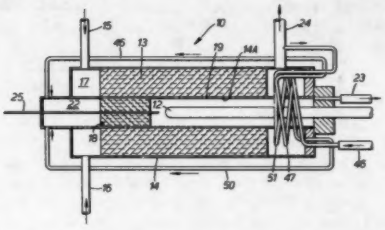
Peter Howard, Chelsea, Mich., and David Weetman, Seaford, England, assignors to Ricardo Consulting Engineers Limited, Shoreham-by-Sea, England

Filed Mar. 7, 1980, Ser. No. 128,314

Claims priority, application United Kingdom, Mar. 15, 1979, 09084/79

Int. Cl.³ G01N *27/58*

U.S. Cl. 204—1 T **21 Claims**



1. An instrument for providing an indication of the ratio of air to fuel of a combustible mixture being supplied to a combustion system which operates on hydrocarbon fuel, for combustion therein, which instrument comprises:

means for effecting the continuous complete combustion of a controlled supply of a hydrocarbon heating fuel with a controlled supply of an oxygen-containing gas to produce heat and a reference gas, said reference gas being a continuous supply of gaseous combustion products containing a known proportion of free oxygen,

means for mixing a sample flow of exhaust gas from said combustion system with at least a sample flow of said reference gas in a controlled porportion, and

means for effecting a catalytic oxidation reaction of the mixture of the sample flows of exhaust gas and reference gas to oxidise any unburnt components derived from the sample flow of said exhaust gas in the mixture,

said means for effecting a catalytic oxidation reaction receiving said heat generated by the combustion of said heating fuel and said oxygen-containing gas to maintain said catalytic oxidation reaction.

8. A method of measuring the ratio of air to fuel of a combustible mixture being supplied to a combustion system operating on hydrocarbon fuel, for combustion therein, which method comprises the steps of:

effecting the continuous complete combustion of a controlled supply of a hydrocarbon heating fuel with a controlled supply of an oxygen-containing gas to produce heat and a reference gas, said reference gas being a continuous supply of gaseous combustion products containing free oxygen in a known proportion,

mixing a sample flow of exhaust gas from said combustion system with a sample flow of said reference gas in a controlled proportion,

effecting a catalytic oxidation reaction of said mixture of said exhaust gas and said reference gas, to oxidise any unburnt components derived from the sample flow of said exhaust gas in the mixture,

said reference gas ensuring the presence of a proportion of free oxygen in the gaseous combustion products of said catalytic oxidation reaction over the range of air/fuel ratios of said combustible mixture,

utilising the heat of combustion of said mixture of said heating fuel and said air to maintain said catalytic oxidation reaction,

using a quick-response oxygen-sensing cell of the solid-oxide electrolyte type to measure the proportion of free oxygen

in the gaseous reaction products of said catalytic oxidation reaction, and

deriving an air/fuel ratio of the combustible mixture being supplied to the combustion system in accordance with predetermined data and the results of said measuring step.

4,283,257

PROCESS FOR PREPARING AMMONIUM METATUNGSTATE

Clarence D. Vanderpool, and Martin B. MacInnis, both of Towanda, Pa., assignors to GTE Products Corporation, Stamford, Conn.

Filed Jun. 9, 1980, Ser. No. 157,571

Int. Cl.³ C25B *1/00*

U.S. Cl. 204—86 **9 Claims**

1. A process for producing ammonium metatungstate from ammonium paratungstate comprising: introducing ammonium paratungstate into an anode chamber of an electrolytic cell having an anode in an anode chamber and a cathode in a cathode chamber, said cell containing an aqueous electrolyte and including an inert liquid permeable media separating the anode chamber from the cathode chamber, passing a direct electric current through said cell for transporting ammonium ions from the anode chamber through the liquid permeable media to increase the concentration of ammonium metatungstate in the electrolyte within the anode chamber, and withdrawing ammonium metatungstate from the anode chamber.

4,283,258

RECOVERY OF TUNGSTEN FROM HEAVY METAL ALLOYS

Clarence D. Vanderpool, Towanda, and Robert P. McClintic, Monroeton, both of Pa., assignors to GTE Products Corporation, Stamford, Conn.

Filed Jun. 27, 1980, Ser. No. 163,467

Int. Cl.³ C25B *1/00, 5/00*

U.S. Cl. 204—102 **3 Claims**

1. A process for producing ammonium paratungstate from a heavy metal alloy containing tungsten comprising introducing the heavy metal alloy into an electrolytic cell as an anode, said cell comprising an inert cathode and an aqueous electrolyte solution comprising ammonium hydroxide and ammonium nitrate, passing a direct electric current through said cell, said ammonium hydroxide and ammonium nitrate being maintained at a suitable concentration for oxidizing tungsten and forming ammonium paratungstate.

4,283,259

METHOD FOR MASKLESS CHEMICAL AND ELECTROCHEMICAL MACHINING

Robert L. Melcher, Yorktown Heights; Lubomyr T. Romankiw, Briarcliff Manor, and Robert J. von Gutfeld, New York, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 8, 1979, Ser. No. 37,074

Int. Cl.³ B23P *1/00;* **C25F** *3/02*

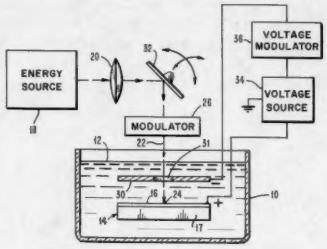
U.S. Cl. 204—129.3 **7 Claims**

1. A method of selectively electrochemical machining regions of a surface of a non-photolytically active workpiece comprising the following steps:

placing the surface to be machined in an electrolyte;

placing a cathode in electrolyte;

focusing an energy beam having an intensity of between about 10^2 W/cm^2 and 10^6 W/cm^2 onto the workpiece to locally heat the regions of the surface where preferential machining is sought;



and establish an electric potential between the workpiece serving as an anode and said cathode.

4,283,260

METHOD AND SYSTEM FOR REGULATING THE DISCHARGE PROCESS IN A CATHODE SPUTTERING APPARATUS

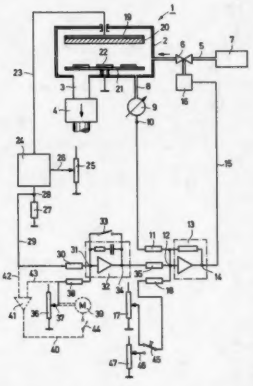
Friedrich W. Thomas, Hasselroth, and Konrad Priess, Hahl am Main, both of Fed. Rep. of Germany, assignors to Leybold-Heraeus, Cologne, Fed. Rep. of Germany

Filed May 2, 1979, Ser. No. 35,363

Claims priority, application Fed. Rep. of Germany, May 13, 1978, 2821119

Int. Cl.³ C23C *15/00*

U.S. Cl. 204—192 R **7 Claims**



1. In a cathode sputtering process, a method for regulating the discharge current, comprising: providing a vacuum chamber with a cathode and at least one counterelectrode therein; initially establishing a substantially constant sputtering pressure in the vacuum chamber; establishing and maintaining a substantially constant sputtering voltage; sensing the actual discharge current across the electrodes; comparing the actual discharge current with a desired reference current value to obtain a difference value if any; sensing the actual sputtering pressure in the chamber; comparing the actual sputtering pressure with a desired reference pressure value to obtain a difference value if any, and adjusting the sputtering pressure from its initial level in response to a deviation of the discharge current from the reference current value and in response to a deviation of the sputtering pressure from the reference pressure value to effect a desired change in the sputtering pressure, whereby the discharge current is stabilized.

4,283,261
ELECTROCHEMICAL SENSOR STRUCTURE TO DETERMINE OXYGEN CONTENT IN COMBUSTION EXHAUST GASES

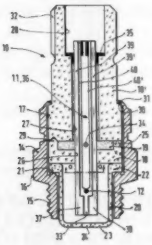
Helmut Maurer, Schwieberdingen; Klaus Müller, Tamm; Franz Rieger, Aalen-Wasseralfingen; Ernst Linder, Mühlacker; Hermann Dietz, Gerlingen; Karl-Hermann Friese, Leonberg, and Bodo Ziegler, Stuttgart, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Dec. 4, 1979, Ser. No. 100,256

Claims priority, application Fed. Rep. of Germany, Dec. 20, 1978, 2855012

Int. Cl.³ G01N *27/46*

U.S. Cl. 204—195 S **26 Claims**



1. Electrochemical sensor to determine the oxygen content in gases, more particularly of combustion exhaust gases, and especially for exhaust gases from automotive-type engines, comprising, the structural arrangement of

a metal housing (**14**, **70**);

a sensor element (**11**, **43**, **51**, **55**, **61**, **68**, **69**, **74**) which includes an elongated solid electrolyte plate (**33**, **44**, **56**, **62**, **72**, **73**, **75**, **76**) longitudinally positioned in the housing,

the sensor element having a holding end portion located and secured in the housing and

a sensing end portion exposed to the exhaust gases and at least one electrode pair (**37**, **38**; **46**, **47**; **52**, **54**; **57**, **58**; **63**, **63'**; **64**, **64'**; **68**, **69**, **79**, **80**) located and secured

on a single surface (**36**, **45**) of the solid electrolyte plate, adjacent said sensing end portion exposed to the gas;

the electrodes (**46**, **47**; **52**, **54**; **57**, **58**) of the pairs facing each other across a gap (**48**, **60**);

the facing edges of the electrodes being formed with extending projections extending towards the other electrode in interdigited relationship;

and electrically conductive connecting tracks (**39**, **39'**; **50**, **50'**) in electrical contact with respective electrodes of at least one electrode pair secured to and applied on said single surface of the solid electrolyte plate, and extending essentially for the length thereof from the electrodes to the holding end portion and forming, adjacent the end of the plate, connecting terminals.

4,283,262
ANALYSIS SYSTEM

Alan D. Cormier, Newburyport; Milo E. Webster, Braintree; John D. Czaban, Bradford; Neil D. Silverman, Framingham, and Lynn W. Noble, Acton, all of Mass., assignors to Instrumentation Laboratory Inc., Lexington, MA

Filed Jul. 1, 1980, Ser. No. 165,051

Int. Cl.³ G01N *27/28, 35/08*

U.S. Cl. 204—195 M **28 Claims**

1. A system for analyzing a biological fluid or the like comprising

an analysis chamber, a measuring system connected in sensing relation to said analysis chamber,

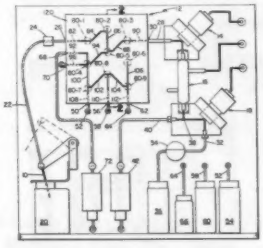
a flow network for connecting a sample inlet port and an auxiliary fluid reservoir to said analysis chamber, and a pump connected between said analysis chamber and an outlet port, said flow network including

a sample flow path connected between said sample inlet port and said analysis chamber,

an auxiliary fluid manifold for connection to said auxiliary fluid reservoir,

a valved T-connection between said sample flow path and said manifold,

an inlet isolation valve in said sample flow path between said sample inlet and said valved T-connection,



a chamber isolation valve in said sample flow path between said valved T-connection and said analysis chamber,

a sample line vent valve between said inlet and chamber isolation valves, and

a manifold vent valve connected to said manifold.

5. The system of claim **1** wherein said measuring system includes an electrochemical electrode with an ion selective membrane that is arranged for exposure to sample in said sample flow path.

4,283,263
COVER FOR ELECTROLYTIC CELLS

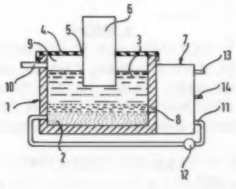
Bruno Mirabelli, Varese, Italy, assignor to Industrie Pirelli S.p.A., Milan, Italy

Filed Mar. 6, 1980, Ser. No. 127,723

Claims priority, application Italy, Mar. 6, 1979, 20762 A/79

Int. Cl.³ C25B *1/40, 9/00*

U.S. Cl. 204—219 **7 Claims**



1. A cover for an electrolytic cell for producing chlorine comprising a laminated plate, a tension resistent insert member imbedded in the laminated plate, said laminated plate consisting essentially of overlapping sheets firmly joined face to face to each other, that sheet of the laminated plate which has a surface exposed outwardly of the cell being an elastomeric composition which is resistent to heat and ozone and the surface of the plate facing the inside of the cell being neoprene vulcanized with lead oxide.

4,283,264

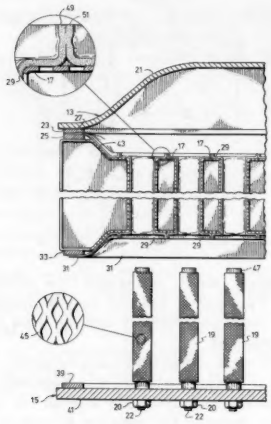
ELECTROLYTIC CELL SEPARATOR, TUBULAR MEMBER COMPONENT THEREOF AND METHODS FOR MANUFACTURING AND USING SUCH SEPARATOR AND COMPONENT

Richard D. Darling, Youngstown, and Christine A. Lazarz, Niagara Falls, both of N.Y., assignors to Hooker Chemicals & Plastics Corp., Niagara Falls, N.Y.

Filed Sep. 14, 1979, Ser. No. 75,489

Int. Cl.³ C25B *9/00, 13/02, 13/08;* **B29D** *23/10*

U.S. Cl. 204—252 **32 Claims**



26. An electrolytic cell comprising a plurality of anodes and cathodes in alternating arrangement, separated by a microporous polymeric separator into anolyte and catholyte compartments, said separator encasing a plurality of the anodes or a plurality of the cathodes and being fastened to the electrolytic cell structure by means of a flange at an end thereof which, when fastened in place, does not strain or tear the separator material and has no cuts or openings in it for direct passage of the electrolyte or gas through it, said flange having projection(s) or point(s) to assist in aligning the separator in the cell.

4,283,265

EXPANDABLE ELECTRODE

Geoffrey C. M. Byrd, Frodsham, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Apr. 21, 1980, Ser. No. 141,916

Claims priority, application United Kingdom, May 2, 1979, 15226/79

Int. Cl.³ C25B *11/02*

U.S. Cl. 204—252 **20 Claims**

1. An expandable electrode suitable for use in an electrolytic cell of the diaphragm or membrane type, and comprising a pair of electrode plates bridged along one edge of each plate, and located between the plates in a plane essentially perpendicular to the faces of the plates at least one spacing member which in profile is in the form of one or more substantially wedge-shaped sections and which is movable relative to the electrode plates, the electrode plates being provided with one or more transverse members which upon movement of the spacing member relative to the plates is or are engaged by the wedge-shaped section(s) of the spacing member(s) to control the spacing between the electrode plates.

20. An electrolytic cell comprising one or more expandable electrodes as claimed in claim **1**.

4,283,266

METHOD AND APPARATUS FOR CONTROLLING HALOGEN ION CONCENTRATION IN A PHOTOGRAPHIC PROCESSING SOLUTION

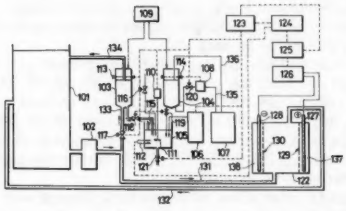
Hiroyuki Hirai; Sachio Matsushita; Isao Tsuyuki, and Kazumi Watase, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Division of Ser. No. 935,391, Aug. 21, 1978, Pat. No. 4,207,157. This application Nov. 8, 1979, Ser. No. 92,776

Claims priority, application Japan, Aug. 30, 1977, 52/104011

Int. Cl.³ B01D *13/02;* **C25B** *9/00, 15/08*

U.S. Cl. 204—263 **6 Claims**



1. An apparatus for controlling the concentration of halogen ions in a photographic processing solution, comprising:

(a) means for sampling a photographic processing solution,

(b) means for determining concentration of the halogen ions in the sampled processing solution according to the change in electric potential caused by the addition of silver ions,

(c) means for removing halogen ions from the processing solution, and

(d) means for controlling the halogen ion removing means in response to the output of the halogen ion determining means.

4,283,267

STAGED TEMPERATURE HYDROGEN-DONOR COAL LIQUEFACTION PROCESS

Peter S. Maa, and Lonnie W. Vernon, both of Baytown, Tex., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed May 11, 1978, Ser. No. 904,826

Int. Cl.³ C10G *1/00, 1/06*

U.S. Cl. 208—8 LE **12 Claims**

1. A hydrogen-donor liquefaction process for converting

coal or similar liquefiable carbonaceous solids into lower molecular weight liquid hydrocarbons which comprises:

(a) contacting said carbonaceous solids with a hydrogen-donor solvent in the absence of an added hydrogenation catalyst under liquefaction conditions in a plurality of liquefaction zones arranged in series and operated such that (1) the temperature in each zone increases from the initial to the final zone of the series, (2) substantially all of the liquids, unconverted carbonaceous solids and mineral matter exiting each zone is passed to the next succeeding zone and (3) the total residence time for all of said zones combined excluding the final zone is greater than the residence time in said final zone, wherein said carbonaceous solids are partially converted into lower molecular weight liquid hydrocarbons in each of said liquefaction zones and said initial zone is operated at a temperature of at least 670° F.; and

(b) recovering liquid hydrocarbonaceous products from the effluent of said final liquefaction zone.

4,283,268

TWO-STAGE COAL LIQUEFACTION PROCESS WITH INTERSTAGE GUARD BED

Joel W. Rosenthal, El Cerrito, and Christopher W. Kuehler, Larkspur, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Sep. 18, 1978, Ser. No. 943,586
Int. Cl.[3] C10G *1/00, 1/06, 45/00, 25/00*
U.S. Cl. 208—8 LE **9 Claims**

1. A process for the liquefaction of coal comprising the steps of

(a) substantially dissolving subdivided coal in a dissolving stage with a solvent in the presence of hydrogen at a temperature in the range of about 400° C. to 480° C. and a pressure of about 35 to 680 atmospheres to form a first effluent mixture containing solvent, dissolved coal, and insoluble solids;

(b) passing solvent, dissolved coal and the insoluble solids from said first effluent mixture with hydrogen through a guard bed of solid porous contact material to substantially reduce the metals content of said first effluent by hydrogenation, to provide a second effluent containing solvent, dissolved coal, and insoluble solids;

(c) passing a slurry containing solvent, dissolved coal and the insoluble solids from said second effluent to a hydrocracking stage containing hydrocracking catalyst and operating under hydrocracking conditions, including a temperature in the range of about 340° to 425° C., a pressure in the range of about 35 to 680 atmospheres and a hydrogen rate of 355 to 3550 liters per liter of slurry.

4,283,269

PROCESS FOR THE PRODUCTION OF A FEEDSTOCK FOR CARBON ARTIFACT MANUFACTURE

Sydney H. J. Greenwood, Sarnia, Canada, assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 29,760, Apr. 13, 1979. This application Jan. 25, 1980, Ser. No. 115,299
Int. Cl.[3] C10C *3/08*
U.S. Cl. 208—45 **10 Claims**

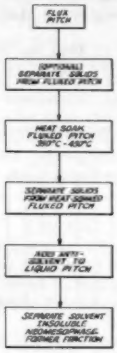
1. A process for treating a carbonaceous pitch comprising:

(a) mixing said pitch with an organic fluxing liquid to form a fluid pitch;

(b) heating said fluid pitch at temperatures in the range of from about 350° C. to about 450° C.;

(c) separating solids suspended in said heated, fluid pitch;

(d) treating said fluid pitch with an organic solvent system having a solubility parameter at 25° C. of between about 8.0 and about 9.5, said treating being at a temperature and with an amount of organic solvent system sufficient to provide a solvent insoluble fraction thermally convertible


FLUX PITCH
[OPTIONAL] SEPARATE SOLIDS FROM FLUXED PITCH
HEAT SOAK FLUXED PITCH 350°C.-450°C
SEPARATE SOLIDS FROM HEAT SOAKED FLUXED PITCH
ADD ANTI-SOLVENT TO LIQUID PITCH
SEPARATE SOLVENT INSOLUBLE MESOMESOPHASE FORMER FRACTION

into a deformable pitch containing greater than 75% of an optically anisotropic phase; and

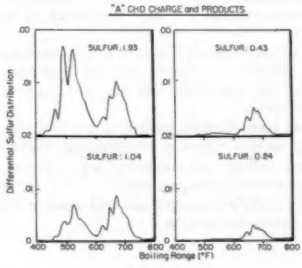
(e) recovering said solvent insoluble fraction.

4,283,270

PROCESS FOR REMOVING SULFUR FROM PETROLEUM OILS

William D. McHale, Swedesboro, N.J., assignor to Mobil Oil Corporation, Fairfax, Va.

Filed Jun. 25, 1980, Ser. No. 163,008
Int. Cl.[3] C10G *7/00, 45/00*
U.S. Cl. 208—50 **10 Claims**

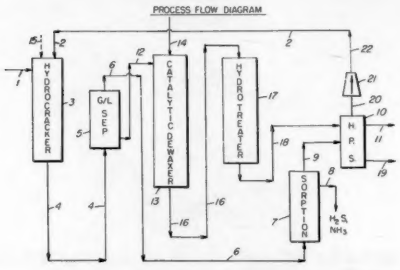


1. A process for desulfurizing a hydrocarbon oil containing sulfur components and having a boiling range of: about 350° to 1000° F., said process comprising the steps of fractionating said hydrocarbon oil to selectively remove a portion of said hydrocarbon boiling in the range of from about 650° to 700° F.; recombining the fractions of said oil formed by said fractionation and from which said 650° to 700° F. fraction has been removed, and introducing said recombined hydrocarbon oil and hydrogen into a reaction zone containing a hydrogenation catalyst and maintaining said reaction zone under hydrodesulfurization conditions including a hydrogen pressure of up to 3000 p.s.i.g. and a temperature of about 600° to about 900° F.

4,283,271
MANUFACTURE OF HYDROCRACKED LOW POUR LUBRICATING OILS

William E. Garwood, Haddonfield, and Murray R. Silk, Cherry Hill, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Jun. 12, 1980, Ser. No. 158,980
Int. Cl.[3] C10G *47/16, 49/22*
U.S. Cl. 208—59 **8 Claims**



1. A continuous process for producing a dewaxed lubricating oil base stock characterized by good stability on exposure to light and air from a hydrocarbon feedstock boiling above about 650° F. (343° C.), which process comprises:

hydrocracking said feedstock in a hydrocracker section containing a hydrocracking zone at hydrocracking conditions including a pressure of 1000 to 3000 psig, said conditions being effective to convert at least 20 volume percent of said feedstock to materials boiling below the initial boiling point of said feedstock, said conversion being accompanied by the consumption of hydrogen and the formation of hydrogen sulfide and ammonia contaminants;

passing the hydrocracker effluent to a high pressure gas-liquid separator whereby hydrocrackate is separated from contaminated hydrogen gas;

passing said hydrocrackate and fresh makeup hydrogen to a catalytic dewaxing section wherein the hydrocrackate is catalytically dewaxed in a high pressure dewaxing zone;

passing the effluent from the catalytic dewaxing section, comprising dewaxed hydrocrackate and hydrogen gas to a high pressure hydrotreating zone operated at conditions effective to stabilize the lube base stock in said hydrocrackate;

passing the hydrotreater effluent to a high pressure separator section thereby recovering makeup hydrogen gas and hydrocarbons comprising said dewaxed, stable lubricating oil base stock;

passing said contaminated hydrogen gas to a high pressure sorption section wherein a substantial fraction of said hydrogen sulfide and ammonia are removed, thereby forming recycle hydrogen; and

passing said recycle hydrogen and said makeup hydrogen to said hydrocracker section.

4,283,272
MANUFACTURE OF HYDROCRACKED LOW POUR LUBRICATING OILS

William E. Garwood, Haddonfield, and Murray R. Silk, Cherry Hill, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

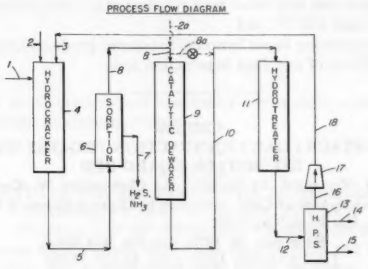
Filed Jun. 12, 1980, Ser. No. 159,011
Int. Cl.[3] C10G *47/16, 49/22*
U.S. Cl. 208—59 **15 Claims**

1. A continuous process for producing a dewaxed lubricating oil base stock characterized by good stability on exposure to light and air from a hydrocarbon feedstock boiling above about 650° F. (343° C.), which process comprises:

hydrocracking said feedstock in a hydrocracker section containing a hydrocracking zone at hydrocracking conditions including a pressure of 1000 to 3000 psig, said conditions being effective to convert at least 20 volume percent of said feedstock to materials boiling below the initial boiling point of said feedstock, said conversion being accompanied by the consumption of hydrogen and the formation of hydrogen sulfide and ammonia contaminants;

passing the hydrocracker effluent comprising hydrocrackate and contaminated hydrogen gas to a sorption section wherein a substantial fraction of said hydrogen sulfide and ammonia contaminants are removed;

passing the effluent from said sorption section, including purified hydrogen gas, to a catalytic dewaxing section wherein the hydrocrackate is catalytically dewaxed in a high pressure dewaxing zone;



passing the effluent from the catalytic dewaxing section, comprising dewaxed hydrocrackate and hydrogen gas to a high pressure hydrotreating zone operated at conditions effective to stabilize the lube base stock in said hydrocrackate;

passing the hydrotreater effluent to a high pressure separator section thereby recovering hydrogen gas and hydrocarbons comprising said dewaxed, stable lubricating oil base stock;

passing makeup hydrogen gas into at least one of said sections and in an amount at least equal to the hydrogen consumed in the hydrocracker section;

recycling said recovered hydrogen gas to said hydrocracker; and

maintaining the circulation of said gas in said process by repressuring said gas by not more than about 750 psi.

4,283,273
METHOD AND SYSTEM FOR REGENERATING FLUIDIZABLE CATALYST PARTICLES

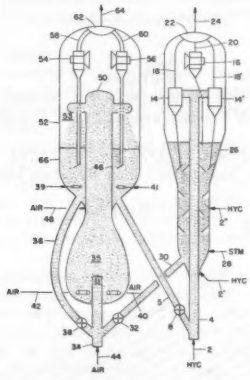
Hartley Owen, Belle Mead, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation of Ser. No. 742,806, Nov. 18, 1976, abandoned, which is a continuation-in-part of Ser. No. 479,726, Jun. 17, 1974, abandoned. This application Nov. 20, 1979, Ser. No. 96,116
Int. Cl.[3] C10G *11/18, 11/05;* **B01J** *29/38, 21/20*
U.S. Cl. 208—113 **9 Claims**

1. In a process for converting hydrocarbons in the presence of fluidized catalyst particles in a hydrocarbon conversion zone and regeneration of the catalyst particles to remove deposited carbonaceous material by burning in a regeneration zone thereby heating the catalyst particles to an elevated temperature suitable for use in hydrocarbon conversion reactions, the improvement which comprises, combining catalyst particles containing deactivating amounts of carbonaceous material with hot freshly regenerated caralyst particles in amounts providing a mix temperature of at least 1175° F., the ratio of regenerated catalyst particles to deactivated catalyst particles in the mix being within the range of 0.5 to 4.0/1, passing the catalyst mix at a temperature of at least 1175° F. suspended in oxygen containing gas under coke burning conditions upwardly through an elongated riser regeneration mixing zone

discharging through a mixed catalyst inlet into the lower portion of a relatively dense fluid mass of catalyst being regenerated, introducing additional pre-heated oxygen containing regeneration gas to a bottom portion of said relatively dense fluid mass of catalyst beneath said mixed catalyst inlet in an amount promoting the combustion of carbonaceous deposits and carbon monoxide in said dense fluid mass of catalyst, passing catalyst particles from said relatively dense catalyst mass suspended in oxygen containing combustion gases upwardly through an elongated dispersed catalyst phase contact zone containing less than 8 lbs. per cu. ft. of catalyst, maintaining the ratio of oxygen containing regeneration gas with said suspended catalyst particles in said dispersed catalyst phase sufficient to burn carbon monoxide and raise the temperature of the catalyst to at least 1350° F., and passing high temperature catalyst of at least 1350° F. from said dispersed catalyst phase into a catalyst separation and collection zone, recovering regenerated catalyst from said dispersed phase as a separate dense fluid bed of catalyst and thereafter passing portions of regenerated catalyst directly to a hydrocarbon conversion zone and said riser regeneration mixing zone.

7. In a process for regenerating a coke deactivated crystalline zeolite hydrocarbon conversion catalyst at a temperature above 1175° F. in an upflowing catalyst suspension comprising a dense phase of catalyst particles superimposed by a more dilute phase of catalyst particles thereabove so as to burn



carbon monoxide and recover from said dispersed phase regenerated catalyst at an elevated temperature of at least 1350° F., the improvement which comprises,

mixing regenerated catalyst particles recovered from said dilute catalyst phase at a temperature of at least 1350° F. with coke deactivated catalyst particles in an amount providing a mix temperature of at least 1175° F., adding oxygen containing regeneration gas to said mixture of regenerated and coke deactivated catalyst particles sufficient to form a suspension thereafter passed through an elongated confined zone under coke burning conditions and discharging the suspension thus formed radially into the lower portion of said upflowing dense phase of catalyst particles.

9. In a process for regenerating a coke deactivated crystalline zeolite hydrocarbon conversion catalyst at an elevated temperature in an upflowing catalyst regeneration zone comprising a relatively large diameter dense fluid bed of catalyst in a lower portion thereof, said regeneration zone diverging into an upwardly extending smaller diameter elongated contact zone wherein coke and carbon monoxide are burned with oxygen containing gas to remove deactivating coke deposits and heat the catalysts to an elevated temperature of at least about 1350° F., the improved method of operation for reducing residual coke on regenerated catalyst below 0.05 weight percent and carbon monoxide in the combustion flue gases less than 0.15 mol percent which comprises,

mixing coke deactivated crystalline zeolite hydrocarbon conversion catalyst with sufficient hot regenerated catalyst recovered from the upper end of said elongated dispersed phase contact zone at a temperature of at least 1350° F. to form a mixed catalyst temperature of at least 1175° F., contacting the mixed catalyst thus formed with oxygen containing regeneration gas in an elongated catalyst suspension transfer zone under coke burning conditions and discharging the suspension thus provided at an elevated temperature radially into the lower portion of said large diameter dense fluid bed of catalyst.

4,283,274

PROCESS FOR CRACKING HYDROCARBONS WITH A CRACKING CATALYST PASSIVATED WITH THALLIUM

Brent J. Bertus, and Dwight L. McKay, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 949,299, Oct. 6, 1978, Pat. No. 4,238,367. This application Apr. 30, 1980, Ser. No. 145,092

Int. Cl.³ C10G *9/16, 11/05*

U.S. Cl. 208—120 **4 Claims**

1. A process for cracking a hydrocarbon oil employing an oil cracking catalyst containing zeolite, the effectiveness of which can be reduced by contaminating metal deposits thereon resulting from said hydrocarbon oil which comprises passivating such metal on such catalyst whenever it appears by adding to said catalyst a thallium supplying material.

4,283,275

APPARATUS FOR PROCESSING WASTE PAPER

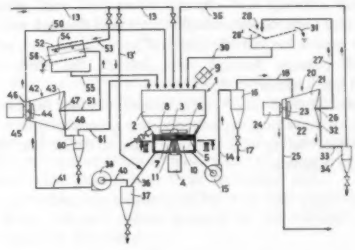
Wolfgang Heinbockel, Weingarten; Wolfgang Siewert, Ravensburg-Weingartshof; Albrecht Kahmann, Weingarten, and Gerhard Lambrecht, Staig-Fronreute, all of Fed. Rep. of Germany, assignors to Escher Wyss GmbH, Ravensburg, Fed. Rep. of Germany

Filed Apr. 7, 1980, Ser. No. 137,601

Claims priority, application Switzerland, May 4, 1979, 4190/79

Int. Cl.³ D21D *5/04*

U.S. Cl. 209—3 **8 Claims**



1. An apparatus for the processing of waste paper, comprising:

a stock pulper provided with a container means;

a rotor arranged within said container means of said stock pulper;

a first sieve plate having holes and located at the region of said rotor;

the liquid stock suspension formed by defiberizing the waste paper passing through the holes of said first sieve plate for further treatment and processing in a paper-making machine;

a second sieve plate provided with holes and arranged at the region of sid rotor within said container means of said stock pulper;

the holes of said second sieve plate being larger in size than the holes of said first sieve plate;

an auxiliary circulation system containing line means operatively connected with the larger holes of said second sieve plate;

said line means leading back to said stock pulper; and

at least one device provided for said auxiliary circulation system for the removal of undesired constituents from said stock suspension.

4,283,276

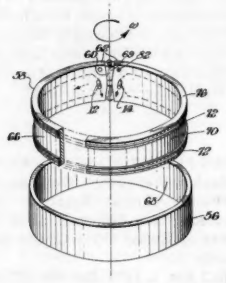
ROTOR FOR SEDIMENTATION FIELD FLOW FRACTIONATION

John W. Grant, Chadds Ford, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 29, 1980, Ser. No. 125,855

Int. Cl.³ B03B *5/62*

U.S. Cl. 209—155 **11 Claims**



1. In an apparatus for separating particulates suspended in a fluid medium according to their effective masses, said apparatus having an annular cylindrical channel with a cylinder axis, means for rotating said channel about said axis, means for passing said fluid medium circumferentially through said channel, and means for introducing said particulates into said medium for passage through said channel, the improvement wherein said channel comprises:

an outer support ring having a constant inner radius, and

a unitary inner ring, separated at one point along its circumference, mating with said outer ring to define said channel there between.

4,283,277

BENEFICIATION OF TRONA BY FLOTATION

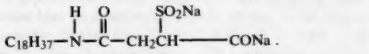
Robert J. Brison, and John C. Gathje, both of Arvada, Colo., assignors to Stauffer Chemical Company, Westport, Conn.

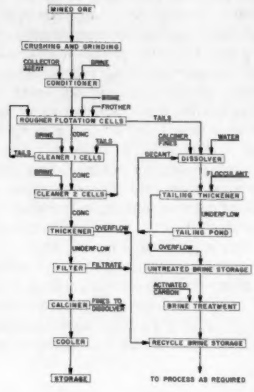
Filed Apr. 30, 1979, Ser. No. 34,527

Int. Cl.³ B03D *1/02*

U.S. Cl. 209—166 **6 Claims**

1. A method for the froth flotation separation of trona from ground trona ore slurried in a saturated brine solution of sodium carbonate and sodium bicarbonate comprising flotating the trona from the slurry using as the flotation collector a compound having the structural formula





4,283,278

SCREENS

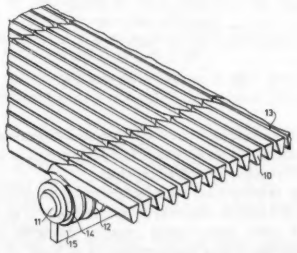
Norman Savage, Oldham, and Douglas A. Sumner, Newton-le-Willows, both of England, assignors to N. Greening Limited, England

Filed Mar. 22, 1979, Ser. No. 22,752

Claims priority, application United Kingdom, Mar. 23, 1978, 11558/78

Int. Cl.³ B07B *1/46*

U.S. Cl. 209—395 **19 Claims**



1. An apertured panel comprising a screen constituted by, in combination:

(i) a plurality of wire members each having a plurality of loops formed therein with the individual loops being disposed at intervals along the length of the wire member, the wire members being disposed side by side and at a spacing so as collectively to present a major face of the screen having slit apertures defined between adjacent wires, the loops extending from the opposite major face of the screen,

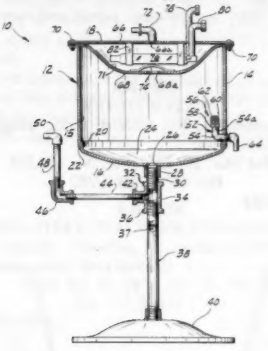
(ii) at least one tie element positioned through aligned respective loops disposed side by side of wire members of the plurality of wire members, and tied to said plurality of wire members, and

(iii) at least one rib member secured to said aligned loops by at least one weld and extending therefrom in a direction away from said opposite major face.

4,283,279
METHOD AND APPARATUS FOR RECLAIMING DRYCLEANING FLUID

Robert G. Smith, Chesterfield, Mo., assignor to Kleen-Rite, Inc., St. Louis, Mo.

Filed Jul. 18, 1980, Ser. No. 170,277
Int. Cl.³ B01D *5/00*
U.S. Cl. 210—123 **7 Claims**



1. An apparatus for recovering drycleaning fluid from a mixture of drycleaning fluid vapor and water vapor comprising:

a closed container;

means for causing a mixture of drycleaning fluid vapor and water vapor to enter said container at the top thereof;

condensing means mounted in said container for condensing said mixture;

means for supplying a cooling medium from the exterior of said container to said condensing means;

first outlet means for removing drycleaning fluid from said container and means associated with said first outlet means for preventing the level of drycleaning fluid in said container from declining below a predetermined minimum level;

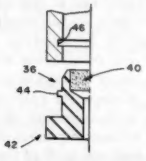
second outlet means located above said first outlet means for removing water from said container;

said second outlet means including a valve which automatically opens said second outlet means only when the level of liquid in said container is above said second outlet means, thereby preventing the escape of vapors through said second outlet means.

4,283,280
CARTRIDGE TYPE SEPARATION COLUMN AND HOLDER ASSEMBLY FOR LIQUID CHROMATOGRAPHS

Robert Brownlee, Santa Clara, Calif., assignor to Brownlee Labs, Inc., Santa Clara, Calif.

Continuation of Ser. No. 936,400, Aug. 24, 1978, abandoned.
This application Jan. 29, 1980, Ser. No. 116,466
Int. Cl.³ B01A *15/08*
U.S. Cl. 210—198.2 **10 Claims**



1. In a liquid chromatograph (LC) system in which a liquid is delivered under pressure from a pump to an LC column, a replaceable column cartridge and holder assembly adapted for removal, shipment, and handling as a self-contained unit including an elongate cylindrical metal tube, a sorbant filling said tube, a pair of plastic seal plugs for closing the ends of said tube, each of said plugs being of T-shape in cross-section with a leg constructed to extend into a respective end of the tube and having a laterally extending end flange portion overlapping the tube at each end to its outer diameter, said tube, seal plugs and said sorbant together forming self-supporting replaceable LC cartridge, fittings for interconnecting the cartridge in the LC output line between the pump output and the LC detector system, each fitting having a cartridge receiving recess therein formed within the body of said fitting and so dimensioned as to receive the same in close fitting relation so that each recess extends at least over the flange portions of said plugs so that the latter totally confined within the recesses by their sidewalls and are axially confined between the cartridge tube and the floor of recess, means for supporting said cartridge and for yieldably urging the cartridge under pressure into sealing engagement between the fittings, the sealing surfaces comprising the floor of each recess, the tube ends, and the interposed seal plug flange, all of which are oriented in direct opposition to leakage forces, said means for urging the column into sealing engagement within said fittings including a holder having an effective length together with said fittings to extend somewhat less than the length of the column, and having threaded portions formed at each end thereof, cap nuts having an open end provided with an associated recess therein having threaded portions for engaging the threaded portions of each end of the holder, the other end of said nut being partially closed to form a cap having an aperture therethrough, said end fittings having a projection extending through the respective aperture and a body contained within said cap recess, and spring means interposed between at least one cap nut and associated end fitting for yieldably urging the latter into engagement with the interposed cartridge as the cap nuts are taken up against said spring means so that said cartridge is placed end to end compression by said holder, cap nuts, and interposed spring means.

4,283,281
HIGH PRESSURE FILTER VESSEL

Leo M. Cogan, Skokie, Ill., assignor to Textile Industries, Inc., Chicago, Ill.

Filed Oct. 29, 1979, Ser. No. 89,282
Int. Cl.³ B01D *29/10*
U.S. Cl. 210—232 **11 Claims**

1. A filter vessel for retaining a filter bag in a fluid path for filtering fluid passing through the vessel under pressure, said vessel comprising:

(1) an otherwise closed vessel defined by an upstanding, circumferential sidewall having an open upper end and a fluid outlet port remote from said upper end;

(2) removable cap means installed over said upper end;

(3) flange support means secured to the sidewall on the interior of the vessel;

(4) a reticulated basket for retaining a filter bag suspended therein;

(5) said basket having annular flange means cooperatively engaged with the flange support means for supporting the basket in the vessel and defining a perimetric entrance into the filter bag suspended in the basket;

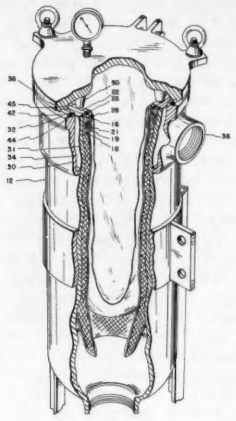
(6) said vessel having collar means mounted on the sidewall adjacent said upper end and defining said fluid path;

A. said collar means including a fluid inlet port;

B. said fluid path extending substantially uninterrupted from said inlet port around the circumference of said sidewall and over said upper end below said cap means, said fluid inlet port and said fluid path cooperating to discharge said fluid under pressure into the filter bag over substantially the entire perimetric entrance of said

basket for efflux thereafter from the vessel through said outlet port; and

(7) wherein said cap means has a plurality of depending projections in registry with said flange support means for engaging a filter bag supported on said flange support



means to retain the filter bag securely suspended in the basket, said plurality of depending projections cooperating with said flange support means to position the filter bag such that said cap means is entirely spaced above the filter bag.

4,283,282

FILTER HAVING VERTICAL FILTER ELEMENTS

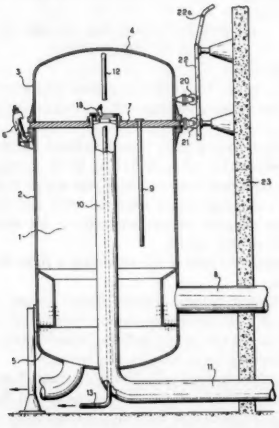
Gilbert Saint-Dizier, Rueil Malmaison; Jean Le Fur, Garches, and Robert Louboutin, Crespieres, all of France, assignors to Degremont, Malmaison, France

Filed Apr. 16, 1980, Ser. No. 140,794

Claims priority, application France, Apr. 20, 1979, 79 10717

Int. Cl.[3] **B01D** *29/32*

U.S. Cl. 210—236 **4 Claims**



1. A filter comprising a vertically disposed filter housing, a support plate, vertical filter elements fixed at their upper ends to the support plate and supported thereby in the housing, a water inlet in the lower portion of the filter, a water outlet pipe passing through the support plate and exiting at the base of the filter, two flanges connecting the support plate to the water outlet pipe in leak-tight manner, one of said flanges being fixed to the pipe and the other flange being fixed to one end of a bellows fixed at its other end to the plate, on O ring interposed between the flanges, and locking clamps disposed inside the pipe and provided to urge the two flanges together, a protective housing positioned around the filter housing, guide rails fixed to the protective housing, and castors carried by the support plate and the upper portion of the filter and being disposed in at least two different planes and movable in the guide rails.

4,283,283

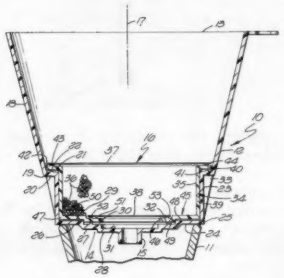
WATER FILTER

George M. Zimmerman, San Gabriel, Calif., assignor to Bon Aqua, Temecula, Calif.

Filed Mar. 20, 1980, Ser. No. 132,318

Int. Cl.[3] **B01D** *27/02*

U.S. Cl. 210—282 **9 Claims**



1. A water filter comprising:

a cup having a top opening through which water may be filled into the cup, and having a bottom outlet through which filtered water discharges; and

a replaceable filter cartridge removably received within a lower portion of said cup and through which the water flows to said outlet;

said replaceable cartridge including a hollow body adapted to be removably placed in said lower portion of the cup and containing a chamber and a top opening through which water flows downwardly into the chamber and a bottom opening through which water discharges from the chamber toward said outlet;

said replaceable cartridge including a first sheet of filter material extending across said top opening of the cartridge body and peripherally sealed to the body about said top opening, a second sheet of filter material extending across said bottom opening of the cartridge body and peripherally sealed to the body about said bottom opening, and a mass of activated carbon contained within said chamber between said first and second sheets of filter material and retained in the chamber by said sheets;

said lower portion of the cup having a cylindrical vertically extending side wall, an annular bottom wall extending inwardly at the lower end of said side wall and containing said outlet at its center, and an annular essentially horizontal flange extending horizontally outwardly from and about the upper end of said side wall and connected peripherally to an upper portion of said cup;

said body of the replaceable cartridge having a vertical cylindrical side wall extending about said chamber and having an outer surface of greater diameter than the internal diameter of said side wall of the lower portion of the cup to be forced fit therein frictionally retaining the cartridge in the cup while permitting it to be forced therefrom for replacement;

said body of the cartridge having an annular bottom wall extending horizontally inwardly from the lower extremity of said side wall of the cartridge body and containing said bottom opening, said second sheet of filter material being received at the upper side of said bottom wall of the cartridge body and being peripherally fusion sealed thereto;

said body of the cartridge having an annular horizontal flange extending outwardly from and about the upper extremity of said side wall of the cartridge body and fusion sealed to the periphery of said first sheet of filter material;

said bottom opening of the cartridge body and said second sheet of filter material being smaller than said upper opening of the cartridge body and said first sheet of filter material, and being larger than said bottom outlet of the cup.

4,283,284

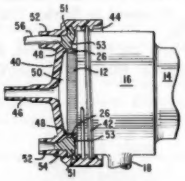
HOLLOW FIBER DIALYZER END SEAL SYSTEM

William J. Schnell, Wheeling, Ill., assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Jul. 18, 1979, Ser. No. 58,589

Int. Cl.³ B01D *31/00*

U.S. Cl. 210—321.3 **22 Claims**



1. In a hollow fiber diffusion device which comprises a bundle of hollow fibers enclosed in a generally rigid tubular housing, said housing having relatively diametrically enlarged manifold members adjacent opposite housing ends, and being sealed at said opposite ends, the improvement comprising, in combination:

a relatively resilient plastic sleeve member carried at each end of said housing and sealed thereto, each sleeve member carrying an integral added inner sleeve of less inner diameter than the inner diameters of the manifold members, said inner sleeves being spaced radially inwardly of the remainder of said plastic sleeve member to define a space therebetween open at one end and coaxially positioned with said housing to receive, hold and center the ends of said bundle, said inner sleeve containing a mass of potting compound which is interspersed throughout the exterior surfaces of the fibers of said bundle, said inner sleeve being made of a material which sealingly adheres to said potting compound.

4,283,285

APPARATUS FOR THE PRODUCTION OF MOLDED BODIES FROM FILTER CAKES

Peter Paschen; Chatty Rao, both of Bergisch-Gladbach, and Helmut Preuss, Bornheim-Walberberg, all of Fed. Rep. of Germany, assignors to Klöckner-Humboldt-Deutz AG, Fed. Rep. of Germany

Continuation of Ser. No. 936,750, Aug. 25, 1978, abandoned. This application Aug. 27, 1979, Ser. No. 69,793

Claims priority, application Fed. Rep. of Germany, Aug. 25, 1977, 2738239

Int. Cl.³ B01D *33/08*

U.S. Cl. 210—326 **1 Claim**

1. An apparatus for producing agglomerates from an abrasive ore sludge which comprises:

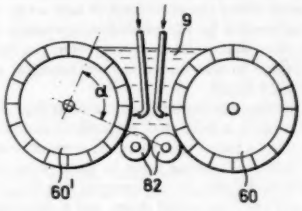
a pair of spaced oppositely rotating filter drums;

two perforate filter means respectively trained about the peripheries of said filter drums;

a means for applying vacuum inwardly of each said filter means;

two multi-cavity molding members respectively disposed over said filter means and each having cavities communicating with said means for applying vacuum;

a pair of rollers composed of soft elastic material and engaging each other and each roller also engaging a respective one of said filter drums;



said filter drums and said rollers forming a compartment between said filter drums and above said rollers for storage of sludge to be filtered adjacent said molding members; and

a sludge discharge means extending into the sludge confined in said compartment and positioned therein to direct sludge into each said molding cavity in a direction of solid sedimentation thereby to direct heavier, more readily settling particles in the sludge into the molding cavities prior to lighter particles contained in the sludge.

4,283,286

CENTRIFUGE WITH PRODUCT ACCELERATOR

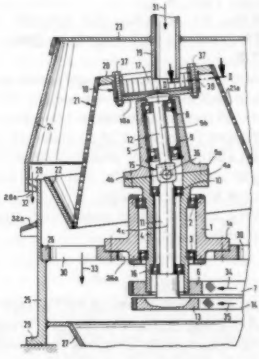
Helmut Wilkesmann, Munich, Fed. Rep. of Germany, assignor to Krauss-Maffei Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Jan. 16, 1980, Ser. No. 112,459

Claims priority, application United Kingdom, Jan. 17, 1979, 2901643

Int. Cl.³ B01D *33/02*

U.S. Cl. 210—365 **11 Claims**



1. In a centrifuge having a housing, a centrifuge drum rotatable in said housing, a drive shaft rotatable in said housing, and operatively connected to said drum, drive means connected to said drive shaft for rotating same to cause a product to be centrifuged in said drum, and inlet opening into said housing for delivering said product to said drum, and a distributor operatively connected to said drive shaft for receiving said

product from said inlet and distributing said product uniformly onto said drum, the improvement wherein:

said distributor is disposed between said drive shaft and said drum and comprises a circular array of angularly equispaced scoop-shaped ribs forming blades accelerating said product in the direction of rotation of said drum and radially directing said product onto the interior of said drum, said ribs having progressively decreasing thicknesses inwardly, said ribs having product displacing surfaces of concave curvature extending radially inwardly and including respective acute angles with a circle centered on the axis of said array and pointing in the direction of rotation along the inner part of said array, said drum being connected by the product-accelerating distributor to said drive shaft, said ribs having front and rear surfaces with respect to said direction terminating at a common edge at said circle.

9. In a centrifuge having a housing, a centrifuge drum rotatable in said housing, a drive shaft rotatable in said housing, and operatively connected to said drum, drive means connected to said drive shaft for rotating same to cause a product to be centrifuged in said drum, an inlet opening into said housing for delivering said product to said drum, and a distributor operatively connected to said drive shaft for receiving said product from said inlet and distributing said product uniformly onto said drum, the improvement wherein:

said distributor comprises a circular array of angularly equispaced scoop-shaped ribs accelerating said product in the direction of rotation of said drum and radially directing said product onto the interior of said drum, said ribs having product-displacing surfaces of concave curvature extending radially inwardly and including respective acute angles with a circle centered on the axis of said array and pointing in the direction of rotation along the inner part of said array, said distributor comprising a support disk, each of said ribs being attached to said support disk by a respective bolt, said drum being mounted on said ribs by said bolts.

4,283,287

STABLE NON-CAKING AQUEOUS SLURRY OF SODIUM CHLORATE AND SODIUM CHLORIDE AND METHOD OF MAKING

Theodore H. Dexter, Lewiston, and Willard A. Fuller, Grand Island, both of N.Y., assignors to Hooker Chemicals & Plastics Corp., Niagara Falls, N.Y.

Filed Dec. 13, 1979, Ser. No. 103,257

Int. Cl.[3] **C01B** *11/02;* **C11D** *3/395, 7/54;* **D06L** *3/06*

U.S. Cl. 252—187 R **8 Claims**

1. A flowable non-caking aqueous slurry stable at 20° C. of sodium chloride and sodium chlorate in a weight ratio ranging from about 0.55 to 0.65 sodium chlorate to 1.0 sodium chloride,

said slurry containing from about 28 to about 33 percent by weight sodium chlorate, from about 15 to about 21 percent by weight sodium chloride, and from about 45 to about 58 percent by weight water,

said slurry having a solid phase substantially entirely of finely divided sodium chloride.

4,283,288

OXIDATION OF BUTANE TO MALEIC ANHYDRIDE

Carl A. Udovich, Joliet, and Bernard L. Meyers, Wheaton, both of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed May 14, 1980, Ser. No. 149,842

Int. Cl.[3] **B01J** *27/14*

U.S. Cl. 252—437 **7 Claims**

1. A catalyst for the production of maleic anhydride by the oxidation of butane which comprises a phosphorus-vanadium mixed oxide, the atomic ratio of vanadium to phosphorus being in the range of 0.5:1 to 1.25:1 wherein the catalyst has a characteristic powder X-ray diffraction pattern using copper K alpha radiation as follows:

angstrom	Line Position 2.θ degrees	Intensity
5.7	15.6	67
4.5	19.7	47
3.7	24.3	36
3.3	27.1	53
3.1	28.8	26
2.9	30.5	100
2.8	32.2	17
2.7	33.7	20

4,283,289

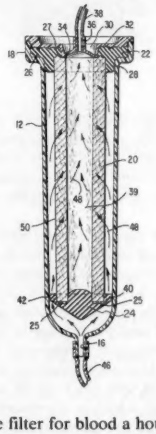
BLOOD FILTER FOR LEUKOCYTES

Richard P. Meyst, Crystal Lake, and Ronald M. Porten, Mundelein, both of Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Aug. 22, 1979, Ser. No. 68,829

Int. Cl.[3] **B01D** *27/06, 39/08*

U.S. Cl. 210—448 **12 Claims**



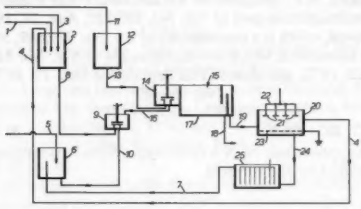
1. In a leukocyte filter for blood a housing defining a blood inlet and an outlet at respective ends thereof, said housing enclosing and carrying a tubular, non-woven fiber filter element with one of said inlet and outlet communicating with the interior of said tubular filter element, and the other of said inlet and outlet communicating with the exterior of said tubular filter element, the improvement comprising, in combination:

said tubular fiber filter element constituting a depth filter having a thickness of 0.2 to 0.6 inch, essentially all of said fibers defining diameters of 10 to 100 microns, from 10 to 70 percent by weight of said fiber defining fiber diameters of from 10 to 20 microns, and at least 50 percent by weight of said fibers having diameters of no more than 35 microns, said fibers being bonded together to define a generally fixed average interstitial spacing which is less at the inner surface of said tubular filter element than at the outer surface thereof, the air permeability of one square foot of said filter being from essentially 15 to 45 SCFM at $\frac{1}{2}$ inch of water.

4,283,290
PURIFICATION UTILIZING LIQUID MEMBRANE WITH ELECTROSTATIC COALESCENCE

Graham A. Davies, Alderley Edge, England, assignor to Davy International (Oil & Chemicals) Ltd., London, England

Continuation of Ser. No. 921,721, Jul. 3, 1978, abandoned, which is a continuation-in-part of Ser. No. 857,821, Dec. 5, 1977, abandoned. This application Oct. 15, 1979, Ser. No. 84,550
Claims priority, application United Kingdom, Jul. 6, 1977, 28317/77
Int. Cl.³ B01D *13/00*
U.S. Cl. 210—643 **20 Claims**



1. In a liquid membrane process for the recovery of a dissolved species from an aqueous solution thereof which comprises:

providing an emulsion comprising droplets of an aqueous interior phase surrounded by a hydrophobic exterior phase which is immiscible with the aqueous solution, which is permeable to said species, and which contains a non-ionic oil-soluble surfactant, the aqueous interior phase comprising a component capable of rendering said species non-permeable;

mixing the aqueous solution with the emulsion thereby to effect intimate contact therebetween and to permit said species to permeate the exterior phase, to desorb from the exterior phase into the interior phase, and to be rendered non-permeable in the interior phase;

separating the emulsion from the aqueous solution now depleted in said species;

breaking the separated emulsion thereby to effect coalescence of the aqueous interior phase; and

recovering coalesced interior phase containing said species, the improvement comprising:

forming the emulsion by emulsifying the aqueous interior phase in the hydrophobic exterior phase under controlled shear conditions so as to produce droplets of interior phase in the hydrophobic exterior phase substantially all of a size lying in the range of from about 0.3 to about 10 micrometers with the majority of the droplets distributed over the range of from about 0.8 to about 3 micrometers; and

breaking the separated emulsion by subjection to an electrostatic field.

4,283,291
CORONA REACTION METHOD AND APPARATUS

Frank E. Lowther, Severna Park, Md., assignor to Union Carbide Corporation, New York, N.Y.

Continuation of Ser. No. 762,053, Jan. 24, 1977, abandoned, which is a division of Ser. No. 632,580, Nov. 17, 1975, Pat. No. 4,038,165, which is a continuation-in-part of Ser. No. 558,046, Mar. 13, 1975, Pat. No. 4,016,060. This application Jun. 18, 1979, Ser. No. 49,554
Int. Cl.³ C01B *13/11*
U.S. Cl. 250—536 **5 Claims**

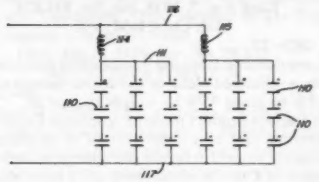
1. A corona discharge generator system for multiple corona cells with each cell having a discharge gap comprising:

power supply means for generating a DC output voltage of substantial magnitude in a range of between 5000 to 30,000 volts DC;

means for converting said high DC output voltage into a series of narrow DC pulses at a pulse rate of between 0.1 to 100 KHz with each of said DC pulses having a predetermined maximum pulse width of less than about the gas ion transit time across the discharge gap of any of the corona cells;

means for superimposing a bias potential upon said series of narrow DC pulses;

at least one bank of corona cells having at least two parallel branches with each branch having at least two series



connected corona cells with the number of parallel branches and number of series cells selected to establish a predetermined capacitance for said bank to control said predetermined pulse width;

means for coupling said narrow pulses to said bank of corona cells, said coupling means including an inductive impedance in series circuit relationship with said bank of corona cells and having a magnitude in a range of between 1–100 microhenry.

4,283,292
SOIL RESISTANT YARN FINISH FOR SYNTHETIC ORGANIC POLYMER YARN

Robert M. Marshall, Chester, and Kimon C. Dardoufas, Richmond, both of Va., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Continuation-in-part of Ser. No. 974,203, Dec. 28, 1978, Pat. No. 4,192,754. This application Dec. 12, 1979, Ser. No. 102,588
The portion of the term of this patent subsequent to Mar. 11, 1997, has been disclaimed.
Int. Cl.³ D06M *13/34*
U.S. Cl. 252—8.8 **51 Claims**

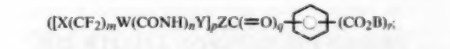
1. An emulsion, comprising:

a. approximately 75 to 98.5 weight percent of water; and

b. approximately 1.5 to 25 weight percent of a composition, said composition comprising:

i. about 15 to 80 weight percent of a solution of a salt of dioctyl sulfosuccinate, propylene glycol and water; and

ii. about 20 to 85 weight percent of a fluorochemical compound having the formula



wherein the attachment of the fluorinated radicals and the radicals CO_2B to the nucleus is in asymmetrical positions with respect to rotation about the axis through the center of the nucleus; wherein "X" is fluorine, or perfluoroalkoxy of 1 to 6 carbon atoms, and m has arithmetic mean between 2 and 20; n is zero or unity; "W" and "Y" are alkylene, cycloalkylene or alkyleneoxy radicals of combined chain length from 2 to 20 atoms; $(CF_2)_m$ and "Y" have each at least 2 carbon atoms in the main chain; "Z" is oxygen and p is 1, or "Z" is nitrogen and p is 2; q is an integer of at least 2 but not greater than 5; "B" is CH_2RCHOH or is $CH_2RCHOCH_2RCHOH$ where "R" is hydrogen or methyl, or "B" is $CH_2CH(OH)CH_2Q$ where Q is halogen, hydroxy, or nitrile; or "B" is $CH_2CH(OH)CH_2OCH_2CH(OH)CH_2Q$; and r is an integer of at least 1 but not greater than q; and $X(CF_2)_m$, W

and Y are straight chains, branched chains or cyclic; and wherein the substituent chains of the above general formulas are the same or different.

4,283,293

METAL WORKING LUBRICANT COMPOSITIONS

John W. Schick, Cherry Hill; Robert H. Davis, Pitman, and Harry J. Andress, Wenonah, all of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Aug. 7, 1978, Ser. No. 931,575

Int. Cl.³ C10M *3/06*

U.S. Cl. 252—32 **22 Claims**

1. An emulsifiable lubricant composition comprising, in the neat form, a sulfurized olefin or sulfurized mineral oil and from about 0.5% to about 95% by weight thereof of

(a) the reaction product made by reacting a C_{12} to C_{20} monocarboxylic acid or a dimer thereof or an alkenylsuccinic anhydride or acid wherein the alkenyl is derived from a mixture of C_{16}–C_{28} olefins with (1) a hydroxyalkylamine containing 2 to 100 carbon atoms, or (2) a hydroxypolyetheramine of the formula

wherein R is a C_8 to C_{18} hydrocarbyl group and x is from 1 to 50, R′ is a $-(CH_2CH_2O)_xCH_2CH_2OH$ group or a $-(CH_2CH_2CH_2O)_xCH_2CH_2CH_2OH$ group and R′ is selected from R and R″; or

(b) the reaction product of (a) (2) and a rosin soap; or

(c) the product of (a) or (b) and from about 0.5% to about 15% by weight thereof of a C_2 to C_{10} monocarboxylic acid.

4,283,294

LUBRICATING OIL COMPOSITION

Christopher T. Clarke, Oxford, England, assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Oct. 12, 1979, Ser. No. 84,364

Claims priority, application United Kingdom, Oct. 13, 1978, 40427/78

Int. Cl.³ C10M *1/48*

U.S. Cl. 252—32.7 R **13 Claims**

1. A lubricating oil composition comprising 60 to 85 parts by weight of lubricating oil, 0.2 to 5 parts by weight of an antioxidant and 15 to 30 parts by weight of a mixture of more than 50 wt.% of group IIa metal overbased detergent and up to 50 wt.% of a Group Ia metal overbased detergent, provided the weight ratio of the overbased detergent mixture to antioxidant lies between 7.5:1 and 50:1, all parts by weight referring to the total active matter of the additive.

4,283,295

PROCESS FOR PREPARING A SULFURIZED MOLYBDENUM-CONTAINING COMPOSITION AND LUBRICATING OIL CONTAINING SAID COMPOSITION

Louis deVries, Greenbrae, and John M. King, San Rafael, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Jun. 28, 1979, Ser. No. 52,700

The portion of the term of this patent subsequent to Mar. 31, 1998, has been disclaimed.

Int. Cl.³ C10M *1/32, 1/38, 1/44, 1/54*

U.S. Cl. 252—46.4 **15 Claims**

1. a process for preparing a sulfurized molybdenum-containing composition which comprises reacting ammonium tetrathiomolybdate and a basic nitrogen compound selected from the group consisting of a succinimide, carboxylic acid amide, hydrocarbyl monoamine, hydrocarbon polyamine, Mannich base, phosphonamide, thiophosphonamide, phosphoramide, or dispersant viscosity index improvers, or mixtures thereof, wherein from 0.01 to 2.00 atoms of molybdenum are present per basic nitrogen atom, in the presence of a polar promoter wherein from 0.1 to 50 mols of promoter are present per mol of molybdenum, in order to form a sulfur and molybdenum-containing composition.

4,283,296

AMINE SALT OF N-TRIAZOLYL-HYDROCARBYL SUCCINAMIC ACID AND LUBRICATING OIL COMPOSITION CONTAINING SAME

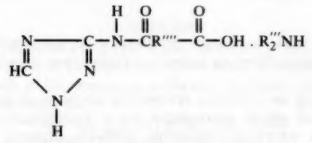
John W. Nebzydoski, Pittsburgh, Pa., and Edwin L. Patmore, Fishkill, N.Y., assignors to Texaco Inc., White Plains, N.Y.

Continuation-in-part of Ser. No. 935,237, Aug. 21, 1978, abandoned, which is a continuation of Ser. No. 776,689, Mar. 11, 1977, abandoned, which is a continuation of Ser. No. 317,446, Dec. 22, 1972, abandoned. This application Dec. 17, 1979, Ser. No. 104,487

Int. Cl.³ C10M *1/46*

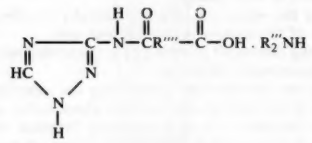
U.S. Cl. 252—49.9 **20 Claims**

1. An amine salt of N-triazol hydrocarbyl succinamic acid represented by the formula



in which R″″ is an alkylene radical having 2 carbon atoms and R‴ is hydrogen or an aliphatic hydrocarbon radical having from 1 to 24 carbon atoms, at least one R‴ being a hydrocarbon radical.

10. A lubricating oil composition comprising a major portion of a base oil having lubricating properties and from about 0.01 to 5 weight percent of an amine salt of N-triazolyl hydrocarbyl succinamic acid represented by the formula:



in which R″″ is an alkylene radical having 2 carbon atoms and R‴ is hydrogen or an aliphatic hydrocarbon radical having from 1 to 24 carbon atoms, at least one R‴ being a hydrocarbon radical.

4,283,297

DE-ICING COMPOSITION ON THE BASIS OF ETHYLENE GLYCOL AND/OR PROPYLENE GLYCOL, WATER AND UREA

Heinrich Peters, Burghausen, and Erich Surma, Winhöring, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Jul. 30, 1979, Ser. No. 61,939

Claims priority, application Fed. Rep. of Germany, Aug. 4, 1978, 2834225

Int. Cl.³ C09K *3/18*

U.S. Cl. 252—70 **9 Claims**

1. Thawing product for liberating areas covered by ice and/or snow which consists of the following components in percent by weight, each relative to their total weight:

60 to 79% by weight of propyleneglycol

0 to 5% by weight of ethyleneglycol

5 to 15% by weight of water

5 to 20% by weight of urea and
1 to 5% by weight of monohydric aliphatic alcohols having from 1 to 7 carbon atoms.

4. Thawing product for liberating areas covered by ice and/or snow which consists of the following components in percent by weight, each relative to their total weight:
70 to 85% by weight of ethyleneglycol
0 to 10% by weight of propyleneglycol
5 to 15% by weight of water
5 to 20% by weight of urea
1 to 5% by weight of monohydric aliphatic alcohols having from 1 to 7 carbon atoms.

4,283,298

HYDRATED $MG(NO_3)_2/NH_4NO_3$ REVERSIBLE PHASE CHANGE COMPOSITIONS

George A. Lane, and Harold E. Rossow, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Nov. 2, 1979, Ser. No. 90,729
Int. Cl.³ C09K *5/06*
U.S. Cl. 252—70 **13 Claims**

1. A reversible liquid/solid phase change composition comprising hydrated $Mg(NO_3)_2/NH_4NO_3$, and as a nucleator, one or more of MgO, CaO, $Mg(OH)_2$, or $Ca(OH)_2$, added to the composition in an amount effective to suppress average supercooling of the hydrated $Mg(NO_3)_2/NH_4NO_3$ liquid phase to about 2° C. or less.

4,283,299

PRODUCTION OF DETERGENT COMPOSITIONS

Gert Becker, Weinheim; Johann U. Oesch, Hockenheim; Horst Poeselt, Bensheim, all of Fed. Rep. of Germany; Alan D. Tomlinson, Vlaardingen, Netherlands, and Kurt Walz, Hockenheim, Fed. Rep. of Germany, assignors to Lever Brothers Company, New York, N.Y.

Filed Oct. 1, 1979, Ser. No. 80,845
Claims priority, application United Kingdom, Oct. 3, 1978, 39074/78
Int. Cl.³ C11D *3/06, 11/0, 11/02, 17/06*
U.S. Cl. 252—90 **15 Claims**

1. A process for preparing a particulate alkaline detergent composition which contains at least about 5% by weight of a synthetic detergent active compound or mixture thereof, at least about 5% of an alkali metal tripolyphosphate and about 3% to about 10% of an alkali metal orthophosphate with a total amount of the tripolyphosphate and orthophosphate of from about 15% to about 25% by weight and no more than 2.5% by weight of alkali metal pyrophosphate, comprising the steps of spray drying a detergent base powder containing some or all of the detergent active compound or compounds and some or all of the alkali metal orthophosphate, and admixing at least about 5% by weight of the alkali metal tripolyphosphate in particulate form with the spray dried base powder, with the remainder if any of the alkali metal tripolyphosphate being spray-dried in the base powder, the percentages being based on the total composition.

15. A method of reducing inorganic deposits in washing machines comprising the steps of adding an effective amount of a particulate alkaline detergent composition to the washing machine to form a wash solution, washing fabrics in said wash solution and then draining the wash solution from the washing machine after the completion of the washing process; said particulate alkaline detergent composition containing at least about 5% by weight of a synthetic detergent active compound or mixture thereof, at least about 5% of an alkali metal tripolyphosphate; about 3% to about 10% of an alkali metal orthophosphate with a total amount of tripolyphosphate and orthophosphate of from about 15% to about 25% by weight and no more than 2.5% by weight of alkali metal pyrophosphate, comprising the steps of spray drying a detergent base powder containing some or all of the detergent active compound or compounds and some or all of the alkali metal orthophosphate, and admixing at least about 5% by weight of the alkali metal tripolyphosphate in particulate form with the spray dried base powder, with the remainder if any of the alkali metal tripolyphosphate being spray dried in the base powder, the percentages being based on the total composition.

4,283,300

METHOD AND COMPOSITION TO INHIBIT STAINING OF PORCELAIN SURFACES BY MANGANESE

James L. Kurtz, Sharonville, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Apr. 9, 1979, Ser. No. 28,612
Int. Cl.³ C11D *3/395, 7/54*
U.S. Cl. 252—95 **7 Claims**

1. A method of inhibiting the staining of surfaces in contact with water which contains at least about 50 ppb of manganese II ions and an oxidizing agent which would oxidize said manganese (II) ions to form staining manganese (IV) ions; said method comprising the step of independently dispensing into said water which contains said manganese (II) ions and said oxidizing agent, from about 0.1 ppm to about 10 ppm of water-soluble, partially hydrolyzed polyacrylamide material having an average molecular weight of from 2000 to 10,000 atomic mass units, and wherein the polyacrylamide contains amide groups which were hydrolyzed to carboxylate/carboxylic acid moieties.

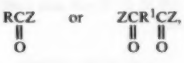
4,283,301

BLEACHING PROCESS AND COMPOSITIONS

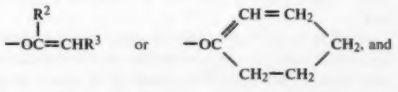
Francis L. Diehl, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Jul. 2, 1980, Ser. No. 165,461
Int. Cl.³ C11D *7/54*
U.S. Cl. 252—102 **19 Claims**

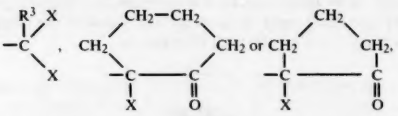
1. A bleaching composition consisting essentially of:
(a) from about 1% to about 70% by weight of a peroxygen bleaching compound selected from the group consisting of hydrogen peroxide, urea peroxide, and alkali metal peroxides, perborates, percarbonates, and perphosphates, and mixtures thereof; and
(b) from about 1% to about 90% by weight of a bleach activator compound of the formula



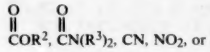
wherein R is a hydrocarbyl group containing from about 5 to about 13 carbon atoms and additionally containing from 0 to about 10 ethylene oxide groups, provided that when R contains greater than about 9 carbon atoms it must contain at least 2 ethylene groups, R^1 is a hydrocarbyl group containing from about 4 to about 24 carbon atoms and additionally containing from 0 to about 10 ethylene oxide groups, provided that when R^1 contains greater than about 12 carbon atoms it must contain at least 2 ethylene oxide groups, and each Z is a leaving group, having a pKa of from about 5 to about 20 and a molecular weight of less than about 175, selected from the group consisting of:
(1) enols of the formula



(2) carbon acids of the formula



wherein each R^2 is a C_1–C_9 alkyl group, each R^3 is hydrogen or a C_1–C_8 alkyl group, and each X is



COR^2, $CN(R^3)_2$, CN, NO_2, or SO_2R^2.

4,283,302

PARTICULATE BLEACH COMPOSITIONS

Roger Foret, Haubourdin, France, and Philippus C. van der Hoeven, Prinsenbeek, Netherlands, assignors to Lever Brothers Company, New York, N.Y.

Filed Jul. 7, 1980, Ser. No. 166,639

Claims priority, application United Kingdom, Jul. 6, 1979, 23765/79

Int. Cl.[3] **C11D** *7/54*

U.S. Cl. 252—102 **6 Claims**

1. A particulate bleach composition comprising 3–99.5% by weight of a particulate inorganic peroxybleach compound, and 0.25–50% by weight of tetraacetyl ethylene diamine (TAED), said TAED having the following particle size distribution as determined by sieve analysis:

0–20% < 150 μm

10–100% > 100 μm < 150 μm

0–50% < 75 μm

0–20% < 50 μm

and being contained in granules in combination with a granulating agent selected from the group consisting of an organic and inorganic carrier material said granules having a particle size ranging from 100 to 2000 μm and comprising 10–99% by weight of said TAED.

4,283,303

PROCESS FOR MANUFACTURE OF STABLE SODIUM DITHIONITE SLURRIES

Leonard C. Ellis, Chesapeake, Va., assignor to Virginia Chemicals Inc., Norfolk, Va.

Filed Jun. 5, 1980, Ser. No. 156,744

Int. Cl.[3] **C01B** *17/66*

U.S. Cl. 252—188 **9 Claims**

1. A process for producing a substantially stable sodium dithionite slurry having a sodium dithionite content of 25–45%, comprising:

A. evaporating a sodium dithionite solution in an evaporator or crystallizer under a vacuum of 25–30 inches Hg, a steam heating jacket temperature of 220°–250° F., and a slurry temperature of 110°–155° F. to create a hot slurry; and

B. cooling said hot slurry promptly while under agitation to create said stable slurry, wherein NaOH is either added to said solution before said evaporating or added immediately following said evaporating of said solution in an amount of 4–5% by weight of said sodium dithionite.

4,283,304

PROCESS FOR REMOVING TRIORGANOPHOSPHINE FROM A LIQUID COMPOSITION

David R. Bryant, and Richard A. Galley, both of South Charleston, W. Va., assignors to Union Carbide Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 40,913, May 21, 1979, abandoned. This application Dec. 28, 1979, Ser. No. 108,279

Int. Cl.[3] **B01J** *31/40, 31/24;* **C07F** *9/50;* **C07C** *45/50*

U.S. Cl. 252—413 **43 Claims**

1. A process for removing triorganophosphine selected from the class consisting of triarylphosphine and alkyl substituted phosphine of the formula

(I)

wherein R is an alkyl radical, R′ is an alkyl or aryl radical and R″ is an aryl radical from a liquid rhodium containing composition or a rhodium containing concentrate of said composition, said process comprising

(1) mixing (a) a rhodium containing composition comprising a rhodium complex hydroformylation catalyst, triarylphosphine and alkyl substituted phosphine of formula (I) above, or (b) a rhodium containing concentrate of said composition, with an α,β-unsaturated compound selected from the group consisting of compounds having the formula

wherein X is a radical selected from the group consisting of

—CN, —Cl, —Br, —I, $—NO_2$, and $—OR^7$; R^6 is a radical selected from the group consisting of hydrogen, alkyl, aryl, hydroxy, alkoxy, amino and halogen; R^7 is an alkyl or aryl radical; and R^3, R^4 and R^5 are each individually radicals selected from the group consisting of hydrogen, alkyl, aryl, X radicals as defined above and $—CH_2X$ radicals wherein X is the same as defined above; and wherein R^4 and R^5 taken together can form an alkylene group having from 2 to 8 carbon atoms; and anhydrides of the carboxylic acids of said α,β-unsaturated formula compounds;

(2) allowing an aqueous mixture of said step (1) to settle into two distinct liquid phases, and

(3) separating the aqueous phase which contains the solubilized reaction products of the alkyl substituted phosphine and/or triarylphosphine present in said composition or concentrate with said α,β-unsaturated compound from the non-aqueous liquid phase resulting from said steps (1) and (2); and wherein the molar ratio of the amount of said α, β-unsaturated compound employed to the total amount of the alkyl substituted phosphine and/or triarylphosphine present in said composition or concentrate is at least 0.1 to 1; and wherein the amount of water employed is at least sufficient to solubilize that amount of the reaction products of said phosphines with said α,β-unsaturated compound resulting from said steps (1) and (2).

2. A process as defined in claim **1** wherein a rhodium containing composition comprising a rhodium complex hydroformylation catalyst, triarylphosphine and alkyl substituted phosphine of formula (I) is mixed, in the presence of water, with said α,β-unsaturated compound.

3. A process as defined in claim **2**, wherein the molar ratio of

the amount of said α,β-unsaturated compound employed to the total amount of said alkyl substituted phosphine present in said rhodium containing composition is at least about 0.1 to 1, while the molar ratio of said α,β-unsaturated compound employed to the total amount of said triarylphosphine present in said rhodium containing composition is less than 1 to 1.

4,283,305

CATALYST COMPOSITION AND ITS USE FOR OLIGOMERIZING OLEFINS

Yves Chauvin, Le Pecq; Dominique Commereuc, Meudon; Jean Gaillard, Lyons; Gerard Leger, Saint Genis les Ollieres, and Nhu Hung Phung, Antony, all of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

Filed Dec. 11, 1979, Ser. No. 102,488

Claims priority, application France, Dec. 11, 1978, 78 35011

Int. Cl.[3] **B01J** *31/14, 31/04*

U.S. Cl. 252—431 C **9 Claims**

1. A catalyst composition obtained by contacting, in any order, at least one bivalent nickel compound with at least one hydrocarbylaluminum halide of the formula $AlRCl_2$ wherein R is a monovalent hydrocarbon group, has, and at least one organic Bronsted acid whose pK_a at 20° C. is at most equal to 3.

4,283,306

CRYSTALLINE SILICA AND USE IN ALKYLATION OF AROMATICS

Frank E. Herkes, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 032,001, Apr. 20, 1979. This application Mar. 26, 1980, Ser. No. 129,272

Int. Cl.[3] **B01J** *21/02*

U.S. Cl. 252—432 **10 Claims**

1. A process for preparing a promoted crystalline silica catalyst comprising contacting crystalline silica with a member selected from the group consisting of arsenic oxide, phosphorus oxide, magnesium oxide, boron oxide, antimony oxide, amorphous silica, alkaline earth metal oxides, alkaline earth metal carbonates and mixtures and precursors of the foregoing, and thermally activating the resulting crystalline silica/promoter combination.

4,283,307

CATALYST STRUCTURE FOR THE PARTIAL OXIDATION OF N-BUTANE TO PRODUCE MALEIC ANHYDRIDE

Bruno J. Barone, Houston, and Gaylon T. Click, Pearland, both of Tex., assignors to Denka Chemical Corporation, Houston, Tex.

Filed Jun. 2, 1980, Ser. No. 155,556

Int. Cl.[3] **B01J** *23/22* **B01J** */27*, **B01J** *27/18*

U.S. Cl. 252—432 **9 Claims**

1. A normal butane partial oxidation catalyst structure comprising a cylinder having a bore therethrough, said cylinder consisting essentially of catalytic material, which is comprised of a phosphorus, vanadium, oxygen complex.

4,283,308

AUTO EXHAUST GAS CATALYST, AND PROCESS FOR PRODUCTION THEREOF

Takashi Ohara, Nishinomiya; Tetsuji Ono, Amagasaki; Kiyoshi Yonehara, Takatsuki, and Shin Yamauchi, Ikeda, all of Japan, assignors to Nippon Shokubai Kagaku Kogyo Co., Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 43,484, May 29, 1979, abandoned. This application Nov. 6, 1979, Ser. No. 91,401

Claims priority, application Japan, Jul. 12, 1978, 53-84023; Aug. 8, 1978, 53-95815

Int. Cl.[3] **B01J** *27/14, 23/10, 8/08*

U.S. Cl. 252—435 **19 Claims**

1. A process for producing an auto exhaust gas catalyst capable of simultaneously removing hydrocarbons, carbon monoxide and nitrogen oxides, said catalyst consisting essentially of cerium, rhodium and platinum, and optionally, at least one additional element selected from the group consisting of iron, lanthanum, palladium and phosphorus, said process comprising first, simultaneously, depositing on a refractory inorganic support 0.5 to 30 g of cerium, 0 to 20 g of iron and 0 to 10 g of lanthanum, as elements, per liter of the finished catalyst, and thereafter depositing thereon, in any desired sequence, 0.005 to 0.3 g of rhodium, 0.05 to 3.0 g of platinum, 0 to 1.2 g of palladium and 0 to 0.5 g of phosphorus as elements, per liter of the finished catalyst, thereby causing rhodium to be present mainly on the surface layer of the catalyst.

4,283,309

HYDROCARBON CONVERSION CATALYST

Elroy M. Gladrow, Baton Rouge, La., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Division of Ser. No. 1,722, Jan. 8, 1979, which is a continuation-in-part of Ser. No. 746,188, Nov. 30, 1976, abandoned, which is a continuation-in-part of Ser. No. 626,225, Oct. 28, 1975, abandoned. This application Oct. 1, 1979, Ser. No. 81,275

Int. Cl.[3] **B01J** *29/08*

U.S. Cl. 252—455 Z **14 Claims**

1. A catalyst comprising: (1) a crystalline aluminosilicate zeolite, (2) a catalytic inorganic oxide gel, and (3) a porous inorganic oxide initially having a surface area greater than about 200 square meters per gram and having at least 0.2 cubic centimeter per gram of its pore volume in pores ranging in diameter from about 90 to about 200 angstroms, said catalyst having at least 0.4 cubic centimeter per gram of its pore volume in pores greater than 90 angstroms in diameter.

2. The catalyst of claim **1** wherein said porous inorganic oxide is selected from the group consisting of alumina, silica, titania, zirconia, magnesia and mixtures thereof.

4,283,310

P.V.C. COMPOSITIONS FOR EXTRUSION MOULDING

Kenneth James, Reading, and Frederick J. Smith, Prescot, both of England, assignors to Talres Development (N.A.) N.V., Netherlands Antilles

Filed Nov. 6, 1979, Ser. No. 91,396

Claims priority, application United Kingdom, Nov. 9, 1978, 43935/78

Int. Cl.[3] **C08K** *5/09, 5/10;* **C08L** *27/06*

U.S. Cl. 260—23 XA **12 Claims**

1. A lead-free stabilised PVC composition for extrusion molding containing as the only stabiliser an alkaline earth metal or zinc soap of one or more fatty acids having an iodine value of from 20–60, and containing a lubricant.

10. A composition according to claim **5**, in which the lubricant comprises montan wax.

4,283,311

PROCESS FOR THE PRODUCTION OF BROKEN DOWN CELLULOSE COPOLYMERS

David H. Blount, 5450 Lea St., San Diego, Calif. 92105

Continuation-in-part of Ser. No. 13,139, Feb. 21, 1979, Pat. No. 4,226,982, which is a continuation-in-part of Ser. No. 884,135, Mar. 7, 1978, Pat. No. 4,159,369, which is a continuation-in-part of Ser. No. 663,924, Mar. 4, 1976, Pat. No. 4,097,424, which is a continuation-in-part of Ser. No. 599,000, Jul. 7, 1975, Pat. No. 4,072,637, which is a continuation-in-part of Ser. No. 262,485, Jun. 14, 1972, abandoned, which is a continuation-in-part of Ser. No. 71,628, Sep. 11, 1970, abandoned. This application Mar. 28, 1980, Ser. No. 134,975

The portion of the term of this patent subsequent to Jan. 27, 1998, has been disclaimed.

Int. Cl.[3] **C08B** *1/08;* **C08J** *9/02;* **C08G** *18/02*

U.S. Cl. 260—9 **30 Claims**

1. The process for the production of broken down cellulose copolymer by mixing and reacting the following components:

Component (a) broken down alkali metal cellulose polymer produced by mixing 2 to 5 parts by weight of an alkali metal hydroxide selected from the group consisting of sodium hydroxide, potassium hydroxide and mixtures thereof with 3 parts by weight of a cellulose-containing plant particle then heating the mixture at 150° C. to 220° C. while agitating for 5 to 60 minutes

Component (b) a substituted organic compound having at least two carbon atoms, each of which is attached to a substituent which will split off during the reaction, to said broken down alkali metal cellulose polymer in the amount wherein the mols of the substituted radicals are about equal to the mols of the alkali radicals in the mixture.

4,283,312

HEAT CURABLE PROCESSABLE EPOXY COMPOSITIONS CONTAINING AROMATIC IODONIUM SALT CATALYST AND COPPER SALT COCATALYST

James V. Crivello, Clifton Park, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 861,128, Dec. 16, 1977, Pat. No. 4,173,551, which is a continuation-in-part of Ser. No. 781,785, Mar. 28, 1977, abandoned, which is a continuation-in-part of Ser. No. 689,247, May 24, 1976, abandoned, which is a continuation-in-part of Ser. No. 638,982, Dec. 9, 1975, Pat. No. 4,058,401, Ser. No. 638,983, Dec. 9, 1975, and Ser. No. 638,994, Dec. 9, 1975, Pat. No. 4,069,055, which is a continuation of Ser. No. 466,378, May 2, 1974, abandoned, said Ser. No. 638,982, is a continuation of Ser. No. 466,374, May 2, 1974, abandoned, said Ser. No. 638,983, is a continuation of Ser. No. 466,375, May 2, 1974, abandoned. This application Aug. 16, 1979, Ser. No. 67,027

The portion of the term of this patent subsequent to Nov. 13, 1996, has been disclaimed.

Int. Cl.[3] **C08G** *59/68, 8/10;* **C08F** *4/00, 4/06*

U.S. Cl. 260—18 EP **5 Claims**

1. A processable heat curable epoxy resin composition comprising

(A) an epoxy resin having a viscosity of from about 100 to 100,000 centipoises at 25° C.

(B) an effective amount of an aromatic iodonium salt catalyst of the formula,

$$[(R)_a(R^1)_bI]_c^+[MQ_d]^{-(d-e)},$$

and

(C) an effective amount of a copper salt cocatalyst, where R is a monovalent aromatic organic radical, R^1 is a divalent aromatic organic radical, M is a metal or metalloid, Q is a halogen radical, a is a whole number equal to 0 or 2, b is a whole number equal to 0 or 1 and the sum of a+b is equal to 1 or 2, c=d−e, e equals the valence of M and is an integer equal to 2–7 inclusive and d>e and is an integer having a value up to 8.

4,283,313

CATHODE-PRECIPITATING ELECTRODEPOSITION COATING COMPOSITION

Hiroyoshi Omika, Yokohama; Hajime Hara, Fujisawa; Yutaka Otsuki, Yokohama; Yoshihiko Araki, Kawasaki, and Kazuho Aoyama, Tokyo, all of Japan, assignors to Nippon Oil Company, Ltd., Tokyo, Japan

Filed Oct. 30, 1979, Ser. No. 89,748

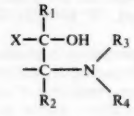
Claims priority, application Japan, Oct. 30, 1978, 53/32510; Jun. 6, 1979, 54/69931

Int. Cl.[3] **C08L** *63/00;* **C09D** *5/40;* **C25D** *13/06*

U.S. Cl. 260—18 EP **7 Claims**

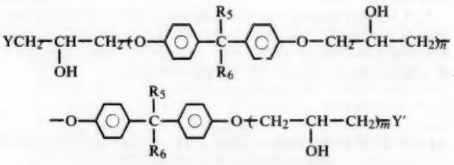
1. A coating composition for cathode-precipitating electrodeposition consisting essentially of

(A) 100 parts by weight of an unsaturated organic compound having a molecular weight of 500 to 10,000 containing a carbon-carbon double bond in an amount corresponding to an iodine value of 100 to 500, said unsaturated organic compound being selected from the group consisting of (a) a polymer of a conjugated diolefin containing 4 to 8 carbon atoms, (b) a copolymer of at least two conjugated diolefins containing 4 to 8 carbon atoms, (c) a copolymer of at least one conjugated diolefin containing 4 to 8 carbon atoms and a vinyl monomer having ethylenic unsaturation containing 2 to 20 carbon atoms, (d) a natural oil, (e) a natural fat and (f) a petroleum resin produced by cationic polymerization of petroleum cracking fractions containing 4 to 10 carbon atoms with a Friedel-Crafts catalyst, said unsaturated organic compound having bonded thereto, through a carbon-carbon bond, basic groups of the formula



wherein R_1 and R_2, independently from each other, represent a hydrogen atom or a methyl group, R_3 and R_4, independently from each other, represent a hydrogen atom or an organic radical having 1 to 10 carbon atoms, at least one of R_3 and R_4 represents an organic radical, X represents a hydrogen atoms or a bond, and when X represents a bond, the carbon atom to which R_1 is attached and the carbon atom to which R_2 is attached may form part of the main chain, the amount of said basic groups in said component (A) being 0.02 to 0.3 mole per 100 g of said component (A), and

(B) 3 to 100 parts by weight of at least one compound represented by the general formula



wherein R_5 and R_6, independently from each other, represent a hydrogen atom or an alkyl group having 1 to 10 carbon atoms, n is an integer of from 0 to 20, m is 1 or 0, Y is a group of the formula

in which R'_3 represents an organic radical having 1 to 10

carbon atoms and R'_4 represents a hydrogen atom or an organic radical having 1 to 10 carbon atoms, a residue of a carboxylic acid having 1 to 20 carbon atoms, or a residue of a phenolic compound having 6 to 20 carbon atoms, and Y' represents a hydrogen atom when m is 0 and Y when m is 1,

said component (A) and said component (B) being neutralized with an organic acid or an inorganic acid and dissolved or dispersed in water.

4,283,314

RESIN COMPOSITION HAVING IMPROVED INTERNAL AND EXTERNAL LUBRICATING PROPERTIES EMPLOYING BRANCHED CHAIN HIGH MOLECULAR WEIGHT ESTER DERIVATIVES OF MONOCARBOXYLIC ACIDS

Jacobus J. Zeilstra, Wijnbergen; Willem J. de Klein, Dieren; Joannes D. Bik, Eerbeek, and Jan Vis, Zevenaar, all of Netherlands, assignors to Akzona Incorporated, Asheville, N.C.

Filed Oct. 26, 1979, Ser. No. 88,582

Claims priority, application Netherlands, Oct. 26, 1978, 7810671

Int. Cl.[3] **C08L** *27/06;* **C08K** *5/09, 5/10*

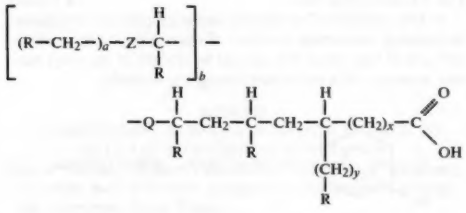
U.S. Cl. 260—23 AR **12 Claims**

1. A resin composition having improved internal and external lubricating properties, comprising polyvinyl chloride or a copolymer thereof and 0,1 to 5% by weight, calculated on the polymer, of one or more acids and/or derivatives thereof selected from the group consisting of

(a) esters of phenols or aromatic, aliphatic or cycloaliphatic alcohols having at least 1 to 10 primary or secondary hydroxyl groups;

(b) amides of aliphatic, cycloaliphatic or aromatic mono- or diamines having 1 or 2 primary or secondary amino groups;

(c) salts of alkali metals or alkaline earth metals, amphoteric metals, heavy metals, of ammonium or of a compound containing a tertiary amino group, characterized in that at least 40 percent by weight of the acid present as such, or at least 40 percent by weight of the acid from which the derivatives are prepared, has a branched-chain structure, and that at least 10 percent by weight thereof corresponds to the formula:



where

x=0, if y=2 or x=2, if y=0;

$R=CH_3(CH_2)_n$, where n represents an integer of from 3 to 42;

b=0 or 1, where

if b=0, Q represents a hydrogen atom, and

if b=1, Q represents a CH_2-group, and

a=0 or 1, where

if a=0, Z represents a hydrogen atom, and

if a=1, Z represents a CH_2-group.

4,283,315

GRAMOPHONE RECORD COMPOSITION

Kenneth James, Reading, and Frederick J. Smith, Prescot, both of England, assignors to Talres Development (N.A.) N.V., Netherlands Antilles

Filed Nov. 6, 1979, Ser. No. 91,802

Claims priority, application United Kingdom, Nov. 6, 1978, 43305/78

Int. Cl.[3] **C08K** *5/09, 5/10;* **C08L** *27/06*

U.S. Cl. 260—23 XA **15 Claims**

1. A stabilised gramophone record composition comprising a vinyl polymer containing by weight from 0.3 to 1.5% of a fatty acid soap of an alkaline earth metal or zinc;

0.3 to 1.85% of sugar or polyol fatty acid esters; and

0.15 to 1.10% of fatty acid mixed glycerides; and being free of heavy metal ions.

12. An antistatic stabilising powder composition for incorporation into a gramophone record plastics composition, comprising 6 to 30 parts by weight of a fatty acid soap of an alkaline earth metal or zinc; 6 to 37 parts by weight of sugar or polyol fatty acid esters and 3 to 22 parts by weight of fatty acid mixed glycerides, together with an anti-caking agent.

4,283,316

SURFACE MODIFICATION OF ALUMINA HYDRATE WITH LIQUID FATTY ACIDS

Patrick V. Bonsignore, Murrysville, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed Sep. 12, 1980, Ser. No. 186,790

Int. Cl.[3] **C08K** *9/04*

U.S. Cl. 260—23 XA **15 Claims**

1. A surface modified alumina hydrate composition compatible with thermoplastic resins, said composition comprising

powdered alumina hydrate having an average particle size of less than about 15 microns, and

about 0.2 to 5 percent, based on the weight of the alumina hydrate, of a liquid mixture of C_{10}–C_{20} carboxylic acids, said mixture having a titer below about 30° C. and an iodine value of about 15 or less.

4,283,317

WAX-FREE, HOT MELT ADHESIVE COMPOSITIONS

Charles V. Murphy, Wilmington, Del., and Robert J. Statz, Kennett Square, Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Sep. 15, 1980, Ser. No. 187,173

Int. Cl.[3] **C08L** *93/04;* **C08K** *5/13, 5/52*

U.S. Cl. 260—27 R **13 Claims**

1. A wax-free adhesive composition having an initial 177° C. melt viscosity of about 1000–4000 kPa·s and consisting essentially of the following components:

(1) about 20–50 parts of a copolymer of a C_2–C_{10} α-olefin with an aliphatic, ethylenically unsaturated carboxylic acid or with maleic anhydride, which copolymer may also contain another ethylenically unsaturated comonomer selected from the group consisting of carboxylic acids and carboxylic acid esters;

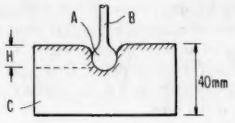
(2) about 30–60 parts of a tall oil rosin; and

(3) about 1–13 parts of a hydrocarbon oil; all the above parts being by weight, and their sum being 100; said adhesive composition also containing a minor amount of an antioxidant capable of stabilizing it against viscosity deterioration and substantial discoloration on heating.

4,283,318
NON-AQUEOUS COMPOSITE GEL AND PROCESS FOR PRODUCTION THEREOF

Yoshikazu Musa, and Isao Mune, both of Ibaraki, Japan, assignors to Nitto Electric Industrial Co., Ltd., Osaka, Japan

Filed Sep. 29, 1980, Ser. No. 191,619
Claims priority, application Japan, Sep. 29, 1979, 54-126268
Int. Cl.³ C08L *91/08;* C08K *5/03;* C08L *7/00*
U.S. Cl. 260—28.5 B **22 Claims**



1. A substantially stable non-aqueous composite gel containing emulsified high boiling point hydrophilic liquid particles, said composite gel consisting of an O/O emulsion comprising

from 15 to 99% by weight of a continuous phase composed of a cross-linked rubber component and an oil component, said rubber component being derived from rubber containing an unsaturated double bond or bonds in the molecules thereof, and

from 85 to 1% by weight of a dispersed phase composed of a high boiling point hydrophilic liquid uniformly emulsified in the continuous phase by an emulsifier.

10. A process for producing a non-aqueous composite gel containing emulsified high boiling point hydrophilic liquid particles, said process comprising

dissolving a rubber component containing an unsaturated double bond or bonds in the molecules thereof in an excess amount of an oil component to form a solution,

adding a cross-linking agent at a temperature below the decomposition temperature thereof and an emulsifier to the solution,

uniformly emulsifying a high boiling point hydrophilic liquid in the resulting solution to form an O/O emulsion comprising from 15 to 99% by weight of a continuous phase composed of the rubber component and the oil component and from 85 to 1% by weight of a dispersed phase of the emulsified high boiling point hydrophilic liquid, and

cross-linking the rubber component to achieve the gelation thereof.

4,283,319
PROCESS FOR PREPARING FOUNDRY CORES OR MOLDS AND BINDER MATERIALS USED THEREFOR

Susumu Konii; Shigeo Sase; Masatoshi Yoshida; Shoei Kuroda, and Takeshi Sumi, all of Shimodate, Japan, assignors to Hitachi Chemical Company, Ltd., Tokyo, Japan

Filed Nov. 7, 1979, Ser. No. 92,022
Claims priority, application Japan, Nov. 13, 1978, 53-139733
Int. Cl.³ C08L *61/12*
U.S. Cl. 260—29.3 **18 Claims**

1. A foundry binder material to be cured with carbon dioxide which comprises (a) an alcohol-soluble phenolic resin selected from the group consisting of resoles, novolacs, N-methylene-resoles, dimethylene ether-type resoles, formal-type resoles and mixtures thereof, (b) 10 to 300 parts by weight of a hydroxide and/or oxide of a polyvalent metal selected from the group consisting of an alkaline earth metal, aluminum, zinc, iron, nickel, titanium, silicon, tin, and a mixture thereof, (c) 100–500 parts by weight of water, (d) 1 to 100 parts by weight of an organic solvent selected from the group consisting of an alcohol, an aromatic hydrocarbon, a ketone, an acetic ester, a phthalic ester, an ether, a cellosolve, dimethylformamide, dimethyl sulfoxide and a mixture thereof, and (e) 0.1 to 50 parts by weight of an alkali metal hydroxide, said parts by weight being based on 100 parts by weight of said alcohol-soluble phenolic resin.

4,283,320
SEMI-GLOSS LATEX PAINT

Howard E. Carroll, Grafton, and Gerald M. Sweitzer, North Ridgeville, both of Ohio, assignors to SCM Corporation, New York, N.Y.

Filed Jun. 4, 1979, Ser. No. 45,239
Int. Cl.³ C08L *33/02*
U.S. Cl. 260—29.6 RW **3 Claims**

1. An aqueous latex dispersion paint composition which coalesces at an ambient coalescing temperature into a semi-gloss hardened continuous paint film, said latex paint having about 30% to 70% by weight total solids and comprising on a dry solids volume basis:

55% to 70% of a film-forming latex binder having a major weight portion of polymer particles between about 500 A and 5000 A and having a glass transition temperature at least about 5° C. below said coalescing temperature whereby said binder particles will coalesce into a binding matrix, said binder particles being a vinyl copolymer comprising by weight at least 40% polymerized vinyl unsaturated monomers;

10% to 25% of solid, non-cellular, non-film-forming polymer particles having a weighted average diameter between about 1000 A and 5000 A and having a glass transition temperature at least about 30° C. above the glass transition temperature of said binder, said non-film-forming polymer particles being polymerized ethylenicaly unsaturated monomers containing between 0.2% and 2% of copolymerized acid monomer selected from acrylic acid or methacrylic acid;

5% to 20% opacifying pigment having a refractive index of at least about 1.8;

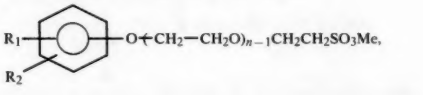
0% to 15% of non-opacifying pigment; and said latex paint having a pigment-volume-content (PVC) between about 30% and 45% PVC but less than critical-PVC as measured by opacity.

4,283,321
ALKYL ARYL ETHYLENEOXY SULFONATE SURFACTANTS FOR VINYL ACETATE POLYMERIZATION

Paritosh M. Chakrabarti, Wayne, and Darrell G. Kirchner, Fairlawn, both of N.J., assignors to GAF Corporation, New York, N.Y.

Filed Oct. 3, 1979, Ser. No. 81,367
Int. Cl.³ C08L *31/04*
U.S. Cl. 260—29.6 MQ **8 Claims**

1. The method of producing aqueous polymer emulsions comprising: contacting a mixture of water, vinyl acetate monomer and at least about 0.1 percent by weight of the vinyl acetate monomer of a surfactant having the formula:



wherein:

R_1 is an alkyl group having from 6 to 18 carbons;

R_2 is H or an alkyl group having from 6 to 12 carbons;

n is greater than 9; and

Me is a monovalent cation selected from the group consisting of NH_4, Na, Li and K,

the weight ratio of water to vinyl acetate being predetermined such that the resultant emulsion contains at least 40% by weight of solids.

4,283,322

EMULSION COMPOSITION AND METHOD FOR USE IN TREATING GLASS FIBERS

Chester S. Temple, McKees Rocks, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation of Ser. No. 11,454, Feb. 12, 1979, Pat. No. 4,240,944. This application Mar. 11, 1980, Ser. No. 129,510
The portion of the term of this patent subsequent to Dec. 23, 1997, has been disclaimed.
Int. Cl.[3] C08L *23/12*
U.S. Cl. 260—29.6 WB 29 Claims

1. An aqueous emulsion composition for use in a size composition for application to glass fibers, comprising:
isotatic carboxylated polypropylene,
amorphous carboxylated polyproplene, where both the isotactic and amorphous carboxylated polypropylene are prepared by modifying isotactic and amorphous polypropylene with ethylenically substituted polycarboxylic acid or anhydride, amide, or lower alkyl ester thereof,
a base,
a surfactant selected from the group consisting of cationic, anionic and nonionic, and
water in amounts sufficient to make a composition having about 20 to about 40 percent solids by weight.

4,283,323

Patent Not Issued For This Number

4,283,324

NAIL ENAMEL COMPOSITION

John A. Duffy, West Milford, N.J., assignor to Avon Products, Inc., Suffern, N.Y.

Filed Dec. 4, 1979, Ser. No. 100,241
Int. Cl.[3] C08F *61/00;* C09D *3/48;* C08F *216/00*
U.S. Cl. 260—31.2 N 5 Claims

1. A nitrocellulose-free nail enamel composition comprising a polyvinyl butyral resin, an aryl-sulfonamide-formaldehyde resin, and a compatible solvent; said solvent being the major constituent of the composition.

4,283,325

HYDROPHOBIC SUBSTRATE WHICH IS ABLE TO RELEASE A CHEMICAL SUBSTANCE

Jeanne Berthet, Velizy Villacoublay, and Gilbert Gaussens, Meudon, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Aug. 15, 1979, Ser. No. 66,521
Claims priority, application France, Aug. 25, 1978, 78 24678
Int. Cl.[3] A61F *5/46*
U.S. Cl. 260—37 M 26 Claims

1. A hydrophobic substrate adapted to release therefrom at least one chemical substance comprising, a hydrophobic polymer matrix, first inclusions and second inclusions homogeneously distributed in the polymeric matrix, said first inclusions comprising a polymeric material which is different from the polymer matrix and forms a stable and continuous system in contact with said inclusions, said second inclusions comprising at least one solid state chemical substance.

4,283,326

PBT MOLDING COMPOSITIONS CONTAINING MICA AND A COMPOSITE POLYMER

John J. Charles, Bloomingdale, and Robert C. Gasman, West Milford, both of N.J., assignors to GAF Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 4,596, Jan. 18, 1979, abandoned, which is a continuation-in-part of Ser. No. 814,535, Jul. 11, 1977, Pat. No. 4,140,670. This application Dec. 26, 1979, Ser. No. 101,950
Int. Cl.[3] C08L *67/02, 63/00*
U.S. Cl. 260—40 R 20 Claims

1. Polyester molding composition consisting essentially of at least about 40 wt% poly (C_2–C_4 alkylene terephthalate) with at least about 50 wt% of such poly (C_2–C_4 alkylene terephthalate) being polybutylene terephthalate having an intrinsic viscosity between about 0.5 and about 2.0 dl/g, such composition containing:
(a) between about 1 and about 40 wt% based on total molding composition of phlogophite mica flakes having an average particle size between about 40 and 325 mesh with at least 90% of all mica flakes present in the composition having particle sizes between about 40 and about 200 mesh; and
(b) between about 5 and about 30 wt% based on total molding composition of a multiphase composite polymer comprising;
(1) about 25 to about 95 wt% of a first elastomeric phase polymerized from a monomer system comprising about 75 to 99.8% by weight C_1 to C_6 alkyl acrylate, 0.1 to 5% by weight crosslinking monomer, and 0.1 to 5% by weight graftlinking monomer, said crosslinking monomer being a polyethylenically unsaturated monomer having a plurality of addition polymerizable reactive groups all of which polymerize at substantially the same rate of reaction, and said graftlinking monomer being a polyethylenically unsaturated monomer having a plurality of addition polymerizable reactive groups, at least one of which polymerizes at a substantially different rate of polymerization from at least one other of said reactive groups; and
(2) about 75 to 5 wt% of a final, rigid thermoplastic phase polymerized in the presence of said elastomeric phase.

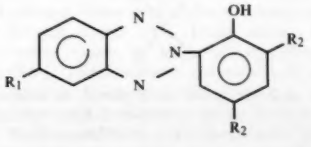
4,283,327

2-(2-HYDROXY-3,5-DI-TERT-OCTYLPHENYL)-2H-BENZOTRIAZOLE STABILIZED COMPOSITIONS

Martin Dexter, Briarcliff Manor, and Roland A. E. Winter, Armonk, both of N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 6391, Jan. 25, 1979, abandoned. This application Aug. 20, 1979, Ser. No. 68,275
Int. Cl.[3] C08K *5/27, 5/34*
U.S. Cl. 260—45.8 NT 6 Claims

1. A composition of matter comprising an organic polymer, subject to light-induced deterioration, selected from the group consisting of thermoset acrylic resins, thermoplastic acrylic resins, alkyd/acrylic resins, alkyd resins and polycarbonates, stabilized with from 0.1 to 5% by weight of a compound of the formula



wherein R_1 is hydrogen or chloro, and R_2 is tert-octyl.

4,283,328

PREPARATION OF DEHYDROPEPTIDES

Charles H. Stammer, Athens, Ga., assignor to Research Corporation, New York, N.Y.

Filed Oct. 1, 1979, Ser. No. 80,210
Int. Cl.³ C07C *103/52;* **A61K** *37/00*
U.S. Cl. 260—112.5 R **3 Claims**

1. A method of stabilizing peptides to enzymatic degradation comprising introducing a dehydrophenylalanine group into the peptide chain so as to produce a dehydropeptide selected from the group consisting of:

aspartyl-dehydrophenylalanine methyl ester; tyrosyl-D-alanyl-glycyl-dehydrophenylalanine methionine amide;

arginyl-prolyl-prolyl-glycyl-dehydrophenylalanylseryl-prolyl-phenylalanyl-arginine;

N-carbobenzoxy-prolyl-dehydrophenylalanylhistidyl-leucine, and its stereoisomers;

leucyl-dehydrophenylalanyl-valyl-phenylalanine methyl ester;

—N-t-butoxy carboxyl-D-alanyl-glycyldehydrophenylalanyl-methionine amide; and

tyrosyl-D-alanyl-glycyl-dehydrophenylalanylmethionine amide acetate.

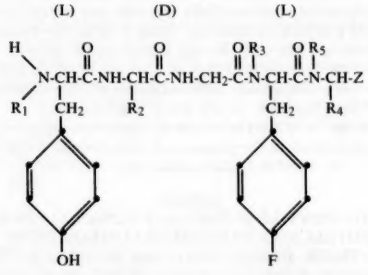
4,283,329

PHARMACOLOGICALLY ACTIVE PEPTIDES

Paul D. Gesellchen, Indianapolis, and Robert T. Shuman, Greenwood, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Dec. 17, 1979, Ser. No. 104,348
Int. Cl.³ C07C *103/52;* **A61K** *37/00*
U.S. Cl. 260—112.5 R **44 Claims**

1. A compound of the formula



and pharmaceutically acceptable non-toxic acid addition salts thereof, in which L and D define the chirality;

R_1 is C_1–C_3 primary alkyl;

R_2 is C_1–C_4 primary or secondary alkyl, allyl, cyclopropylmethyl, C_1–C_2 hydroxyalkyl, or $-(CH_2)_m-U-CH_3$ in which U is —S—or >S—O and m is 1 or 2;

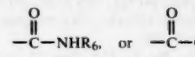
R_3 is hydrogen

R_4 is hydrogen, C_1–C_5 primary or secondary alkyl, $-(CH_2)_n-X-(CH_2)_p-CH_3$ in which X is —O—, —S—, >S—O or

n is 1 or 2, and p is 0 or 1, phenyl, or monosubstituted phenyl in which the substituent is halo, hydroxy, C_1–C_3 alkoxy, nitro, C_1–C_3 alkyl, or trifluoromethyl;

R_5 is hydrogen or C_1–C_4 primary alkyl; and

Z is $-CH_2OR_6$,



in which R_6 is hydrogen or C_1–C_3 alkyl and R_7 is C_1–C_3 alkyl.

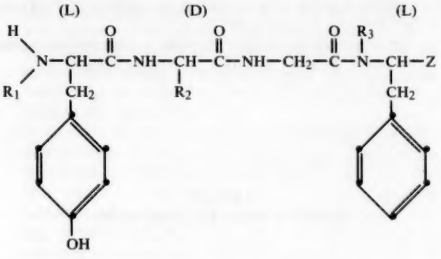
4,283,330

PHARMACOLOGICALLY ACTIVE PEPTIDES

Robert T. Shuman, Greenwood, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Dec. 17, 1979, Ser. No. 104,349
Int. Cl.³ C07C *103/52;* **A61K** *37/00*
U.S. Cl. 260—112.5 R **13 Claims**

1. A compound of the formula



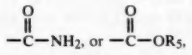
and pharmaceutically acceptable non-toxic acid addition salts thereof, in which L and D define the chirality;

R_1 is hydrogen or C_1–C_3 primary alkyl;

R_2 is C_1–C_4 primary or secondary alkyl, allyl, cyclopropylmethyl, C_1–C_2 hydroxyalkyl, or $-(CH_2)_m-U-CH_3$ in which U is —S— or >S—O and m is 1 or 2;

R_3 is cyclopropylmethyl; and

Z is $-CH_2OR_4$,



in which R_4 is hydrogen, acetyl, or acetoxymethyl and R_5 is C_1–C_3 alkyl.

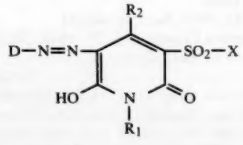
4,283,331

AZO DYES, THEIR PREPARATION AND USE

Karl Seitz, Oberwil, and Dieter Mäusezahl, Biel-Benken, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

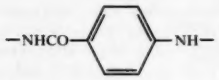
Filed Jan. 22, 1979, Ser. No. 5,058
Claims priority, application Switzerland, Jan. 25, 1978, 805/78
Int. Cl.³ C09B *29/22, 29/36, 31/14*
U.S. Cl. 260—153 **8 Claims**

1. An azo dye of the formula



wherein D is a diazo component of the benzene or naphthalene series which contains a sulfonic acid group and a

fiber-reactive radical, capable of reacting with the hydroxyl groups of cellulose or with the amino groups of natural or synthetic polyamides with the formation of covalent chemical bonds therewith, said fiber-reactive radical bonded to a ring carbon atom of D via an —N(-R)—group, in which R is hydrogen or alkyl of 1 to 4 carbon atoms, a —CH_2—NH—bridge or an



bridge, R_1 is hydrogen or an alkyl radical having 1 to 4 carbon atoms, R_2 is an alkyl radical having 1 to 4 carbon atoms and X is a substituted or unsubstituted alkyl or alkenyl radical.

4,283,332

AZO DYES CONTAINING FLUORINATED CARBOXYLIC OR SULPHONIC ESTER GROUPS ON THE DIAZO MOIETY

Robert N. Gourley, Formby, England, assignor to Eastman Kodak Company, Rochester, N.Y.

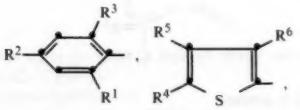
Filed Dec. 31, 1979, Ser. No. 108,723

Claims priority, application United Kingdom, Nov. 6, 1979, 38335/79

Int. Cl.[3] **C09B** *29/085, 29/26, 29/36, 29/44*

U.S. Cl. 260—155 **7 Claims**

1. An azo compound of the structure X—N=N—C' wherein X is selected from



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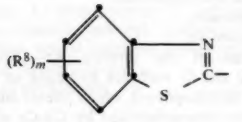

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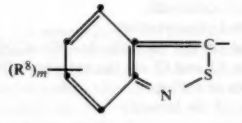

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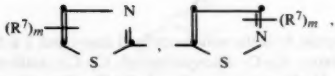

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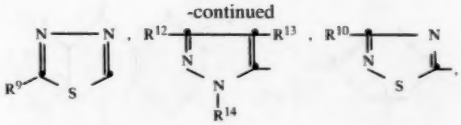
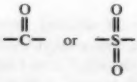


G H I

-continued

wherein one or two substituents R^1 through R^{13} on each radical is an ester group of the structure —Z—O—R wherein Z is either



and R is a lower alkyl group, straight chain, branched chain or alicyclic, and which is substituted with 1–3 fluorine atoms;

R^1 is hydrogen, halogen, cyano, nitro, formyl, lower alkanoyl, benzoyl, lower alkoxycarbonyl, lower alkylsulfonyl, sulfamoyl, lower alkylsulfamoyl, carbamoyl, lower alkylcarbamoyl, or trifluoromethyl;

R^2 is halogen, cyano, lower alkylsulfonyl, formyl, lower alkanoyl, benzoyl, lower alkoxycarbonyl, sulfamoyl, lower alkylsulfamoyl, carbamoyl, lower alkylcarbamoyl, trifluoromethyl, or nitro;

R^3 is hydrogen, halogen, cyano or nitro;

R^6 is cyano, nitro, aryl, lower alkanoyl, aroyl, lower alkoxycarbonyl, lower hydroxyalkoxycarbonyl, lower alkoxy-lower-alkoxycarbonyl, or the group 13 $CONR^{4'}R^{5'}$ in which $R^{4'}$ individually is hydrogen, lower alkyl, cyclohexyl, lower alkylcyclohexyl, cyclohexylmethyl, lower alkylcyclohexylmethyl, lower hydroxyalkylcyclohexylmethyl, aryl-lower-alkyl, or aryl; $R^{5'}$ individually is hydrogen or lower alkyl; and $R^{4'}$ and $R^{5'}$ in combination are pentamethylene or ethyleneoxyethylene;

R^5 is hydrogen, lower alkyl, lower alkoxy, aryl-lower-alkyl or aryl;

R^4 is selected from R^1, lower alkyl, thiocyanato and arylazo;

R^7 is hydrogen, lower alkyl, lower alkoxy, nitro, halogen, lower alkylsulfonyl, carbamoyl, lower alkylcarbamoyl, lower alkoxycarbonyl, sulfamoyl, lower alkylsulfamoyl, cyano, thiocyanato, trifluoromethyl or phenyl;

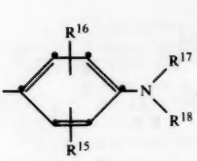
R^8 is hydrogen, lower alkyl, lower alkoxy, nitro, halogen, lower alkylsulfonyl, substituted lower alkylsulfonyl, carbamoyl, lower alkylcarbamoyl, lower alkoxycarbonyl, sulfamoyl, lower alkylsulfamoyl, cyano, thiocyanato, lower alkylthio, cyclohexylthio, phenylthio or trifluoromethyl;

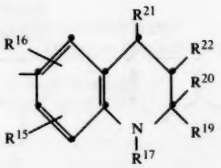
R^9 and R^{10} are fluorinated ester groups of the formula —Z—O—R;

R^{12} is hydrogen, cyano, or lower alkyl;

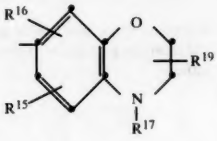
R^{13} is cyano, carbamoyl, nitro, or lower alkoxycarbonyl;

R^{14} is hydrogen, lower alkyl, phenyl, phenyl substituted with halogen, lower alkyl, lower alkoxy, lower alkanoylamino, cyano, or lower alkoxycarbonyl, lower alkylsulfonyl, phenylsulfonyl, phenylsulfonyl substituted with halogen, lower alkyl, lower alkoxy, lower alkanoylamino, cyano, or lower alkoxycarbonyl; and m is 1 or 2; and C' is an aniline, tetrahydroquinoline, or benzomorpholine type coupler selected from those of the formulae





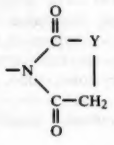
and



wherein

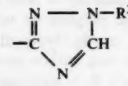
R^{15} and R^{16} are each selected from hydrogen, fluorine, chlorine, bromine, lower alkyl, cycloalkyl, lower alkoxy, trifluoromethyl, phenoxy, lower alkylthio, arylthio, and radicals having the formula —NH—X'—R^{23} in which X' is —CO—, —COO—, or —SO_2—, and R^{23} is selected from lower alkyl and lower alkyl substituted with halogen, hydroxy, phenoxy, aryl, cyano, cycloalkyl, lower alkylsulfonyl, lower alkylthio, lower alkanoyloxy, and lower alkoxy, and when X' is —CO—, R^{23} is further selected from hydrogen, amino, lower alkylamino, lower alkylcarbamoyl, lower dialkylamino, arylamino, aryl, furfuryl and furyl;

R^{17} and R^{18} are selected from hydrogen; cycloalkyl; cycloalkyl substituted with one or two groups selected from lower alkyl, —OH, lower alkoxy, halogen and hydroxy substituted lower alkyl; phenyl or phenyl substituted with lower alkyl, lower alkoxy, halogen, lower alkanoylamino, cyano or lower alkoxycarbonyl; straight or branched lower alkenyl; straight or branched alkyl of 1–8 carbons and such alkyl substituted with the following: hydroxy; halogen; cyano; amino; succinimido; glutarimido; phthalimido; 2-pyrrolidono; cyclohexyl; phenyl or phenyl substituted with lower alkyl, lower alkoxy, halogen, lower alkanoylamino, cyano or lower alkoxycarbonyl; lower alkanoyloxy; lower alkanoylamino; sulfamoyl; lower alkylsulfamoyl; vinylsulfonyl; acrylamido; phthalimidinyl; benzoylsulfonicimidyl; lower alkylsulfonamido; phenylsulfonamido; lower alkoxycarbonylamino; lower alkylcarbamoyloxy; lower alkoxycarbonyl; lower alkoxycarbonyloxy; lower alkenylcarbonylamino;



Wherein Y is —NH—,

—O—, —S—, or —CH_2O—; —S—R^{24} wherein R^{24} is lower alkyl, phenyl, phenyl substituted with halogen, lower alkyl, lower alkoxy, lower alkanoylamino, cyano, or lower alkoxycarbonyl, pyridyl, pyrimidinyl, benzoxazolyl, benzimidazolyl, benzothiazolyl, triazolyl, or



—SO_2R^{23}; —$COOR^{23}$; —$OX'R^{23}$; —NH—X'—R^{23}; —X'—R^{23}; —OCO—R^{23}; —$CONR^{25}R^{25}$; —$SO_2NR^{25}R^{25}$; wherein R^{23} and X' are as defined above and each R^{25} is selected from H and R^{23}; lower alkoxy; lower alkoxy substituted with hydroxy, cyano, lower alkanoyloxy, or lower alkoxy; phenoxy; phenoxy substituted with one or more of lower alkyl, lower alkoxy or halogen; and R^{17} and R^{18} combined in the aniline couplers to form with the nitrogen atom a ring containing pentamethylene, ethyleneoxyethylene or ethylenesulfonylethylene groups;

R^{19}, R^{20}, R^{21} and R^{22} are each selected from hydrogen and lower alkyl.

4,283,333

α-[4-OXOAZETIDIN-1-yl]-ACETIC ACID COMPOUNDS USEFUL AS INTERMEDIATES IN PREPARING 1-OXADETHIACEPHALOSPORINS

Mitsuru Yoshioka, Toyonaka; Yoshio Hamashima, Kyoto, and Wataru Nagata, Nishinomiya, all of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

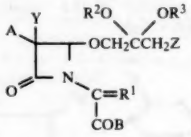
Division of Ser. No. 819,505, Jul. 26, 1977, abandoned. This application Mar. 12, 1979, Ser. No. 19,895

Claims priority, application Japan, Jul. 28, 1976, 51-90690

Int. Cl.[3] **C07D** *705/08, 405/14, 405/12, 401/12*

U.S. Cl. 260—239 A **23 Claims**

1. A compound of the formula:



wherein A is amino,

acrylamino selected from the group consisting of

(1) C_1–C_{10} alkanoylamino,

(2) C_1–C_5 haloalkanoylamino,

(3) azidoacetamido,

(4) cyanoacetamido,

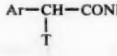
(5) acylamino of the formula Ar—CQQ'—CONH—, wherein Q and Q' each are hydrogen or methyl, Ar is phenyl or dihydrophenyl, which phenyl and dihydrophenyl may be monosubstituted by C_1–C_5 alkyl, trifluoromethyl, cyano, aminomethyl, protected carboxymethylthio, hydroxy, C_1–C_3 alkoxy, C_1–C_{10} alkanoyloxy, chlorine, bromine, iodine, fluorine, or nitro,

(6) 2-sydnon-3-acetamido,

(7) (4-pyridon-1-yl)-acetamido,

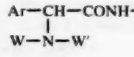
(8) acylamino of the formula Ar—G—CQQ'—CONH—, wherein Ar, Q, and Q' are the same as defined above and G is oxygen or sulfur,

(9) acylamino of the formula

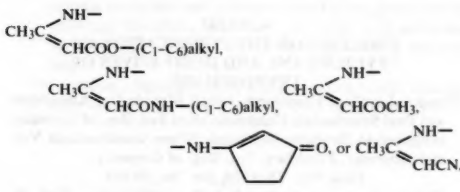


wherein Ar is the same as defined above and T is hydroxy, carboxy, C_2–C_7 alkoxycarbonyl, C_8–C_{15} aralkoxycarbonyl, C_7–C_{12} aryloxycarbonyl, C_1–C_7 alkanoyloxy, C_1–C_3 alkoxy, cyano, carbamoyl, sulfo or C_1–C_7 alkoxysulfonyl,

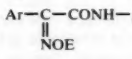
(10) acylamino of the formula



wherein Ar is the same as defined above and W and W' are, respectively, (i) hydrogen, (ii) C_2–C_7 alkoxycarbonyl, (iii) C_3–C_{10} cycloalkyl-(C_2–C_3)alkoxycarbonyl, (iv) C_5–C_8 cycloalkoxycarbonyl, (v) C_1–C_4 alkylsulfonyl-(C_1–C_4)alkoxycarbonyl, (vi) halo(C_1–C_3)alkoxycarbonyl, (vii) C_8–C_{15} aralkoxycarbonyl, (viii) C_1–C_{10} alkanoyl or (ix) C_7–C_{15} aroyl, which groups (ii) through (ix) are unsubstituted or monosubstituted by hydroxy, C_1–C_{10} alkanoyloxy, halogen, C_1–C_5 alkyl, C_1–C_3 hydroxyalkyl or trifluoromethyl, (x) pyronecarbonyl, (xi) thiopyronecarbonyl, (xii) pyridonecarbonyl, (xiii) carbamoyl, (xiv) guanidinocarbonyl, (xv) 3-methyl-2-oxoimidazolidin-1-ylcarbonyl, (xvi) 3-methanesulfonyl-2-oxoimidazolidin-1-ylcarbonyl, (xvii) 4-methyl-2,3-dioxopiperazin-1-ylcarbonyl or (xviii) 4-ethyl-2,3-dioxopiperazin-1-ylcarbonyl, or W and W', together with the nitrogen atom to which they are attached, represent phthalimido, maleimido or an enamino of the formula



(11) acylamino of the formula



wherein Ar is the same as defined above and E is hydrogen or C_1–C_5 alkyl,

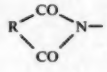
(12) 5-aminoadipoylamino,

(13) N-protected 5-aminoadipoylamino,

(14) carboxy-protected 5-aminoadipoylamino, and

(15) acylamino of the formula L—O—CONH—, wherein L is t-butyl, 1,1-dimethylpropyl, cyclopropylmethyl, 1-methylcyclohexyl, isobutyl, 2-alkoxy-t-butyl, 2,2,2-trichloroethyl, benzyl, naphthyl, p-methoxybenzyl, pyridylmethyl or diphenylmethyl,

diacylamino of the formula



wherein R is a noncyclic C_2–C_8 hydrocarbon radical,

amino substituted by t-butyl, trityl, methylidene, benzylidene, 1-halo-2-phenylethylidene, 1-alkoxy-2-phenylethylidene, 3,5-di-t-butyl-4-hydroxybenzylidene, o-hydroxybenzylidene or trimethylsilyl, or

a group selected from azido, isocyanato and isocyano; COB is carboxy or protected carboxy; R^1 is $=C(CH_3)_2$,

$=PR^4_3$ or

wherein R^4 is alkyl, monocyclic aryl or monocyclic aralkyl; OR^2 and OR^3, independently of each other, represent methoxy, ethoxy, propoxy, isobutoxy, pentyloxy, cyclohexyloxy, octyloxy, benzyloxy, phenethyloxy or pyridylmethoxy, or OR^2 and OR^3, taken together, represent ethylenedioxy, propylenedioxy, trimethylenedioxy, phenylethylenedioxy, phenyltrimethylenedioxy or diphenylpropylenedioxy;

Y is hydrogen or methoxy; and

Z is hydrogen or halogen.

4,283,334

2,3-DISUBSTITUTED-2,3,6,7,8,9-HEXAHYDRO-5H-THIAZOLO[3,2-A]-[1,3]DIAZOCIN-3-OLS

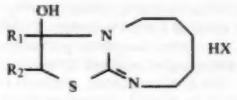
Andrew S. Tomcufcik, Old Tappan; William B. Wright, Jr., Woodcliff Lake, both of N.J., and Joseph W. Marsico, Jr., Pearl River, N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Filed Dec. 5, 1979, Ser. No. 100,673

Int. Cl.[3] **C07D** *277/00*

U.S. Cl. 260—245.5 **8 Claims**

1. A compound of the formula:



wherein R_1 is phenyl, p-chlorophenyl, 2,3,4-trichlorophenyl, 2-chloro-5-trifluoromethylphenyl or 2-thienyl; R_2 is hydrogen, methyl or phenyl; and X is chloro or bromo.

4,283,335

PROCESS FOR PRODUCING DIALKYL DITHIOPHOSPHORIC ACID ESTERS

James Minn, Hattiesburg, Miss., assignor to Boots Hercules Agrochemicals Co., Wilmington, Del.

Filed Feb. 22, 1980, Ser. No. 123,547

Int. Cl.[3] **C07D** *209/48;* **C07F** *9/173;* **C07D** *319/12*

U.S. Cl. 260—326 E **7 Claims**

1. In the process of producing O,O-dialkyl dithiophosphoric acid esters by the reaction of an O,O-dialkyl dithiophosphoric acid with an organic chloride which contains at least one acid-replaceable chlorine atom on a carbon atom attached to oxygen, sulfur or nitrogen by a single bond in the presence of a catalytic amount of zinc chloride, ferrous chloride or stannous chloride, the improvement which comprises effecting said reaction in the presence of from 0.1 to 1.5 moles per mole of the organic chloride of an anhydride of a fatty acid containing 2 to 5 carbon atoms.

2. The process of claim 1 wherein the reaction is carried out in an inert solvent.

3. The process of claim 2 in which the anhydride is acetic anhydride.

7. The process of claim 3 in which the organic chloride is N(1,2-dichloroethyl)phthalimide.

4,283,336
PROCESS FOR THE PREPARATION OF 3-AMINO-2-(5-FLUORO AND 5-METHOXY-1H-INDOL-3-YL)PROPANOIC ACID DERIVATIVES

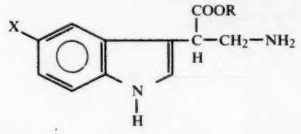
Robert N. Schut, Edwardsburg, Mich.; Max E. Safdy, Elkhart, Ind., and Enrique Hong, Mexico City, Mexico, assignors to Miles Laboratories, Inc., Elkhart, Ind.

Division of Ser. No. 915,735, Jun. 15, 1978, abandoned. This application Oct. 17, 1979, Ser. No. 85,915

Int. Cl.[3] **C07D** *209/18, 209/20*

U.S. Cl. 260—326.14 R **5 Claims**

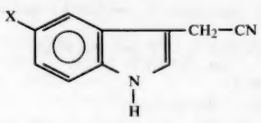
1. A process for preparing a compound having Formula I



I

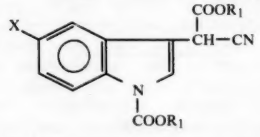
wherein R is a hydrogen atom or a methyl group and X is fluorine or a methoxy group, comprising the steps of:

(a) reacting a compound having Formula II



II

wherein X is fluorine or a methoxy group, with an alkali metal base selected from the group of sodium metal, lithium hydride, sodium ethoxide or potassium t-butoxide and an acyloxylating agent selected from the group of diethyl carbonate, dimethyl carbonate, dibenzyl carbonate, ethyl chloroformate or methyl chloroformate in a suitable solvent at a temperature in the range of from about 0° to 110° C. to produce a compound having Formula III

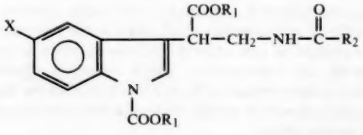


III

wherein X is as above and R_1 is a lower alkyl group of from 1 to 3 carbon atoms or a phenyl group;

(b) separating compound III from the reaction mass;

(c) hydrogenating the compound having Formula III under pressure, in the presence of a catalyst, in a suitable solvent selected from the group of acetyl chloride, acetic anhydride, propionyl chloride or benzoyl chloride to produce a compound having Formula IV,

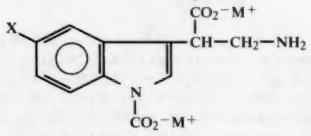


IV

wherein R_1 and X are as defined above and R_2 is methyl, ethyl or phenyl;

(d) separating Compound IV from the reaction mass;

(e) hydrolyzing the compound having Formula IV with an aqueous alkali metal hydroxide at a concentration from about 3 N to 10 N for about 1 to 15 hours, at a temperature of from about 50° C. to 100° C. to produce a compound having Formula V,



V

wherein M^+ is an alkali metal cation and X is as defined above;

(f) decarboxylating the compound having Formula V with an aqueous acid at a temperature from about 50° C. to 100° C. and isolating the compound having Formula I wherein R is a hydrogen atom and X is as defined above, and

(g) optionally esterifying the compound having Formula I, wherein R is a hydrogen atom and X is as defined above, with methanol in the presence of an acid catalyst to produce the compound having Formula I wherein R is a methoxy group and X is as defined above.

4,283,337
PROCESS FOR THE PURIFICATION OF TRYPTOPHANE AND DERIVATIVES OF TRYPTOPHANE

Theodor Lussling, Constance; Alfred Maierhofer, Allensbach, and Paul Scherberich, Constance, all of Fed. Rep. of Germany, assignors to Deutsche Gold und- Silber-Scheideanstalt Vormals Roessler, Frankfurt, Fed. Rep. of Germany

Filed Nov. 15, 1979, Ser. No. 94,801

Claims priority, application Fed. Rep. of Germany, Nov. 18, 1978, 2850074

Int. Cl.[3] **C07D** *209/20*

U.S. Cl. 260—326.14 T **14 Claims**

1. In a process for purifying a substance which is (1) tryptophane or (2) tryptophane substituted in the 2 or 5 position of the ring by chlorine, bromine, fluorine, alkyl of 1–4 carbon atoms, hydroxy or benzyloxy or (3) tryptophane substituted on the NH_2 group by formyl, acetyl, chloroacetyl, fluoroacetyl, benzoyl, phthaloyl toluenesulfomyl or carbobenzoxy, the improvement consisting essentially of treating the substance to be purified in a solvent inert under the conditions of purification at a temperature between about 20° C. and the boiling point of the mixture with an alkali metal dithionite.

4,283,338
PROCESS FOR PRODUCING O,O-DIALKYL DITHIOPHOSPHORIC ACID ESTERS

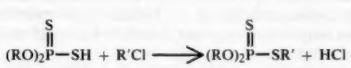
James Minn, Hattiesburg, Miss., assignor to Boots Hercules Agrochemicals Co., Wilmington, Del.

Filed Feb. 22, 1980, Ser. No. 123,548

Int. Cl.[3] **C07D** *209/48;* **C07F** *9/173;* **C07D** *319/12*

U.S. Cl. 260—326 E **6 Claims**

1. In the process defined by the reaction:



where R is an alkyl group having 1 to 4 carbon atoms and R'Cl is an organic chloride which contains at least one acid-replaceable chlorine atom on a carbon atom attached to oxygen, sulfur or nitrogen by a single bond, which reaction is effected in the presence of a catalytic amount of zinc chloride, ferrous chloride or stannous chloride and in the absence of a sequestering agent for the hydrogen chloride liberated by the reaction, the improvement which comprises conducting said reaction under

sufficient pressure to maintain the liberated hydrogen chloride in the system during the course of the reaction.

6. The process of claim 2 in which the organic chloride is N(1,2-dichloroethyl)phthalimide.

4,283,339

PREPARATION OF DIOXANE AND CO-PRODUCTS

Norman B. Godfrey, Austin, Tex., assignor to Highland Resources, Inc., Houston, Tex.

Filed Jun. 29, 1979, Ser. No. 53,558
Int. Cl.³ C07D *319/10*
U.S. Cl. 260—340.6 **22 Claims**

1. A method of making dioxane comprising the steps of:

(a) providing a reaction zone at temperatures in the range of from about 225° C. to about 275° C. containing a reaction medium comprising a mixture of partial phosphate esters of a polyethylene glycol and ammonium salts of partial esters of a polyethylene glycol; and

(b) reacting a liquid polyethylene glycol in the reaction zone to form dioxane.

4. A method of making dioxane comprising the steps of:

(a) heating in a reaction zone a mixture of ammonium dihydrogen phosphate and a liquid polyethylene glycol, while distilling therefrom a mixture of water and ammonia, thereby forming in the reaction zone a reaction medium; and

(b) reacting a liquid polyethylene glycol in a heated reaction zone containing the reaction medium to form dioxane.

4,283,340

ASCORBIC ACID INTERMEDIATES

Thomas C. Crawford, New London, Conn., assignor to Pfizer Inc., New York, N.Y.

Division of Ser. No. 805,880, Jun. 13, 1977, Pat. No. 4,232,168. This application May 5, 1980, Ser. No. 146,239
Int. Cl.³ C07D *319/04*
U.S. Cl. 260—340.7 **6 Claims**

1. Methyl 3,5:4,6-di-O-benzylidene-L-gulonate.

4. Ethyl 3,5:4,6-di-O-benzylidene-2-nitrato-L-gulonate.

5. Ethyl 3,5:4,6-di-O-benzylidene-L-xylo-hexulosanate.

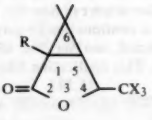
4,283,341

PROCESS TO BICYCLIC LACTONES

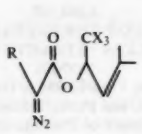
Kiyoshi Kondo; Toshiyuki Takashima, and Daiei Tunemoto, all of Kanagawa, Japan, assignors to FMC Corporation, Philadelphia, Pa.

Division of Ser. No. 49,826, Jun. 18, 1979, Pat. No. 4,254,282, which is a continuation-in-part of Ser. No. 736, Jan. 3, 1979, abandoned, which is a continuation-in-part of Ser. No. 875,649, Feb. 6, 1978, abandoned. This application Oct. 30, 1979, Ser. No. 89,683
Int. Cl.³ C07D *307/93*
U.S. Cl. 260—343.3 R **5 Claims**

1. A process for preparing a lactone of the formula



wherein each X is a chlorine or bromine atom, R is hydrogen or a lower alkoxycarbonyl group, and the lactone is the (1R,4R,5S) isomer, the (1S,4S,5R) isomer, or a mixture thereof, which comprises cyclizing a diazo ester of the formula



by heating in the presence of a copper-containing catalyst, thereby producing said lactone.

4,283,342

ANTICANCER AGENTS AND METHODS OF MANUFACTURE

Seymour Yolles, Newark, Del., assignor to University of Delaware, Newark, Del.

Filed Jan. 31, 1980, Ser. No. 117,378
Int. Cl.³ C07D *309/00, 311/00;* C07F *15/00*
U.S. Cl. 260—345.1 **9 Claims**

1. A metal coordination compound comprising, as a therapeutic portion,

(a) A multi-ring quinone having at least one hydroxy group in a ring fused to the quinone ring as ligand,

(b) chelated at keto and hydroxy groups with the platinum metal

(c) in a cis-dichloro platinum (II) compound having two platinum metal coordinate bonds each joined to a member of the group consisting of ammonia, mono-substituted ammonia and ammonia radicals connected one to the other by single valence bonds through adjacent carbons of a carbon ring compound, and

(d) additional cis-dichloro platinum (II) compound not bonded to the hydroxy quinone but coordinated to said platinum which is bonded to said hydroxy quinone, and, as a non-therapeutic portion,

(e) excess platinum in the form of tetrachloro-platinate anion.

4,283,343

PROCESS FOR PRODUCING LIQUID DIBASIC ACID ANHYDRIDES

Motoyuki Yamato, Kamakura, and Tadao Natsuume, Yokosuka, both of Japan, assignors to Nippon Zeon Co. Ltd., Tokyo, Japan

Filed Dec. 19, 1979, Ser. No. 105,247
Claims priority, application Japan, Dec. 28, 1978, 53-164297
Int. Cl.³ C07D *307/89*
U.S. Cl. 260—346.3 **9 Claims**

1. A process for producing a dibasic acid anhydride which is liquid at 0° C., comprising heat-treating in the presence of a stereoisomerization catalyst a structural isomeric mixture of methyltetrahydrophthalic anhydride resulting from the shifting of its double bond.

4,283,344

PROCESS FOR PRODUCING 1,1,3,3-TETRAFLUORO-1,3-DIHYDRO-ISOBENZOFURAN

Tsumoru Kodaira, Takatsuki; Yoshiro Kobayashi, Tokyo, and Hitoshi Kurono, Toyonaka, all of Japan, assignors to Nihon Nohyaku Co., Ltd., Tokyo, Japan

Filed Mar. 7, 1980, Ser. No. 128,190
Claims priority, application Japan, Mar. 9, 1979, 54-27312
Int. Cl.³ C07D *307/78*
U.S. Cl. 260—346.22 **2 Claims**

1. A process for producing 1,1,3,3-tetrafluoro-1,3-dihydroisobenzofuran, which is characterized by reacting α,α,α-trichloro-o-toluic chloride with anhydrous hydrogen fluoride at an amount ratio of 4 moles or slight excess of the latter to 1 mole of the former.

4,283,345

PROCESS FOR THE PREPARATION OF MONONITRO-1,2,3,4-TETRAHYDROANTHRAQUINONES

Serge Y. Delavarenne, Francheville le Haut; Bernard Dubreux, Francheville le Bas, and Pierre Tellier, Sainte Foy les Lyon, all of France, assignors to Produits Chimiques Ugine Kuhlmann, Courbevoie, France

Filed Jan. 14, 1980, Ser. No. 112,001

Claims priority, application France, Jan. 19, 1979, 7901325

Int. Cl.³ C07C *50/18*

U.S. Cl. 260—369 **27 Claims**

1. A process for the preparation of mononitro derivatives of 1,2,3,4-tetrahydro-anthraquinones from 1,4,4a,9a-tetrahydro-anthraquinone which comprises effecting a thermal pretreatment of the 1,4,4a,9a-tetrahydro-anthraquinone in the presence of a hydrogenation catalyst in an inert atmosphere and in the absence of oxidizing or reducing agents which leads to a mixture of anthraquinone, 1,2,3,4-tetrahydro-9,10-anthracenediol and 1,2,3,4-tetrahydro-anthraquinone, separating the anthraquinone by-product and the catalyst and subjecting the mixture of 1,2,3,4-tetrahydro-9,10-anthracenediol and 1,2,3,4-tetrahydro-anthraquinone obtained to a nitration reaction to obtain 5-nitro-1,2,3,4-tetrahydro-anthraquinone and 6-nitro-1,2,3,4-tetrahydro-anthraquinone.

4,283,346

TREATMENT OF AN OIL-CONTAINING CLAY

Hiroo Ouchi, Yokohama, and Noriyasu Saito, Yokosuka, both of Japan, assignors to The Nisshin Oil Mills, Ltd., Tokyo, Japan

Continuation of Ser. No. 776,043, Mar. 9, 1977, abandoned. This application Jan. 8, 1979, Ser. No. 1,575

Int. Cl.³ C11B *3/04, 3/06*

U.S. Cl. 260—424 **8 Claims**

1. A process for the recovery of oil from an oil-containing clay which has been by-produced in the decoloration of an animal and vegetable fat and oil with a decoloring agent consisting mainly of said clay, which comprises adding to said oil-containing clay, water and an alkali in an amount corresponding to at least the saponification value relative to the oil content thereof to obtain a slurry, treating the slurry at high temperature of about 110° C. or more under high pressures of more than about 5 kg/cm^2 to strip the oil portion, then adding an acid in an amount sufficient for neutralization to cause formation and surfacing of the oil portion primarily as fatty acids, separating and recovering the floating fatty acids and oil, and separating the clay-containing aqueous lower phase into clay sludges and waste water.

4,283,347

PARA-MENTH-1-ENE-7-SULFONIC ACID AND SALTS THEREOF

Bernard J. Kane, Atlantic Beach, and Sean G. Traynor, Jacksonville, both of Fla., assignors to SCM Corporation, New York, N.Y.

Division of Ser. No. 29,858, Apr. 13, 1979, Pat. No. 4,224,240, which is a continuation of Ser. No. 879,127, Feb. 21, 1978, abandoned. This application Feb. 27, 1980, Ser. No. 125,151

Int. Cl.³ C07C *143/22*

U.S. Cl. 260—429.9 **4 Claims**

1. The para-menth-1-ene-7-sulfonate salt of an alkali metal, alkaline earth metal, amine, zinc, or aluminum.

4,283,348

METHOD OF PREPARING 2-ARYL-3-CYCLOPENTANEDIONE COMPOUNDS

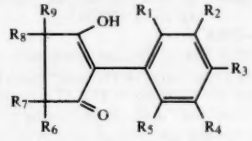
Thomas N. Wheeler, Charleston, W. Va., assignor to Union Carbide Corporation, New York, N.Y.

Division of Ser. No. 944,995, Sep. 22, 1978. This application Sep. 26, 1979, Ser. No. 78,923

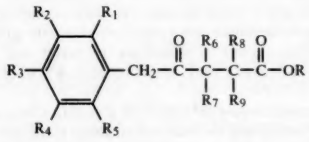
Int. Cl.³ C07C *49/707, 121/76, 147/10*

U.S. Cl. 260—465 D **2 Claims**

1. A method of preparing a compound of the formula:



which comprises reacting in a toluene solvent a compound of the formula:



with a sodium ethoxide base; wherein:

R is a C_1–C_4 alkyl group;

R_1 is an alkyl, haloalkyl, halogen or polyhaloalkyl group:

R_2, R_3, R_4, and R_5 are individually hydrogen, or a nitro, polyhaloalkyl, halogen, cyano, alkyl, alkoxy, alkylthio, alkylsulfinyl, alkylsulfonyl, alkanoyl, amido, amino or haloalkyl group;

R_6, R_7, R_8, and R_9 are individually hydrogen, or either an unsubstituted or substituted alkyl, alkenyl, cycloalkyl, cycloalkenyl or phenyl group wherein the permissible substituents are one or more alkyl, alkanoyl, cycloalkyl, cycloalkenyl, cyano, halogen, nitro, alkoxy, aryloxy, alkylthio, arylthio, alkylsulfinyl, alkylsulfonyl, acylamido or dialkylamino groups;

with the provisos that R_1, R_2, R_3, R_4, R_5, R_6, R_7, R_8 and R_9 substituents individually may not include more than ten aliphatic carbon atoms.

4,283,349

NOVEL OXIODINIUM AND THIAIODINIUM COMPOUNDS

William N. Cannon, Greenwood, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 337,345, Mar. 2, 1973, Pat. No. 4,193,935, which is a continuation-in-part of Ser. No. 16,589, Mar. 4, 1970, abandoned, which is a continuation-in-part of Ser. No. 270,545, Apr. 4, 1963, abandoned, and Ser. No. 654,656, Jul. 19, 1967, Pat. No. 3,506,719. This application May 21, 1979, Ser. No. 41,283

Int. Cl.³ C07C *143/24, 59/08;* **A01N** *37/00*

U.S. Cl. 260—505 R **2 Claims**

1. The compound dibenz[be][1,4]oxiodinium 3,4-dichlorobenzene sulfonate.

2. The compound 3,7-dichloro-dibenz[be][1,4]oxiodinium lactate.

4,283,350

19,20-DIDEHYDRO-PG$_2$ AMIDES

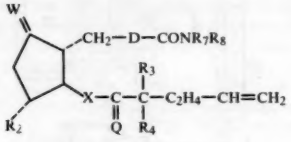
John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 26,066, Apr. 2, 1979, Pat. No. 4,243,611. This application Oct. 17, 1979, Ser. No. 85,738

Int. Cl.[3] **C07C** *177/00, 103/19*

U.S. Cl. 564—189 **1 Claim**

1. A compound of the formula



wherein D is

(1) cis—CH=CH—CH$_2$—(CH$_2$)$_g$—CH$_2$—,

(2) cis—CH=CH—CH$_2$—(CH$_2$)$_g$—CF$_2$—,

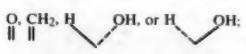
(3) cis—CH$_2$—CH=CH—CH$_2$—CH$_2$—,

(4) trans-(CH$_2$)$_3$—CH=CH—,

wherein Q is

wherein R_5 is hydrogen or methyl, wherein R_7 and R_8 are hydrogen, alkyl of one to 12 carbon atoms, inclusive, benzyl, or phenyl, being the same or different. wherein R_2 is hydrogen, hydroxyl, or hydroxymethyl; wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro;

wherein W is



and wherein X is cis—or trans—CH=CH— or —C≡C—.

4,283,351

19,20-DIDEHYDRO-13,14-DIHYDRO-PG$_2$ AMIDES

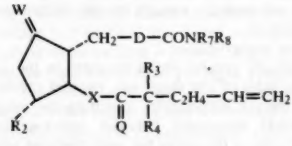
John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 26,066, Apr. 2, 1979. This application Oct. 17, 1979, Ser. No. 85,739

Int. Cl.[3] **C07C** *177/00, 103/19*

U.S. Cl. 564—189 **1 Claim**

1. A compound of the formula



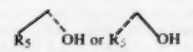
wherein D is

(1) cis—CH=CH—CH$_2$—(CH$_2$)$_g$—CH$_2$—, (2) cis—CH=CH—CH$_2$—(CH$_2$)$_g$—CF$_2$—,

(3) cis—CH$_2$—CH=CH—CH$_2$—CH$_2$—,

(4) trans—(CH$_2$)$_3$—CH=CH—,

wherein Q is



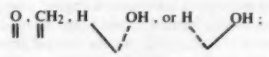
wherein R_5 is hydrogen or methyl,

wherein R_7 and R_8 are hydrogen, alkyl of one to 12 carbon atoms, inclusive, benzyl, or phenyl, being the same or different;

wherein R_2 is hydrogen, hydroxyl, or hydroxymethyl;

wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro;

wherein W is



and wherein X is —CH$_2$CH$_2$—

4,283,352

METHOD FOR THE PRODUCTION OF α-TETRALONE

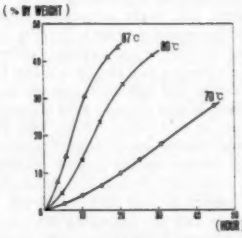
Takashi Yamauchi, Tokyo, and Hirofumi Nanbu, Urawa, both of Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 817,597, Jul. 21, 1977, abandoned, which is a continuation of Ser. No. 703,776, Jul. 9, 1976, abandoned. This application Jan. 3, 1979, Ser. No. 800

Claims priority, application Japan, Jul. 14, 1975, 50/85242

Int. Cl.[2] **C07C** *45/02*

U.S. Cl. 568—311 **4 Claims**



1. A method for the production of alpha-tetralone comprising:

oxidizing tetralin in the absence of any catalysts at a temperature of from 50° to 100° C. to an extent that the conversion of tetralin into tetralin hydroperoxide is 25 to 35% by weight, thereby producing a solution of tetralin hydroperoxide in tetralin; and decomposing the thus formed tetralin hydroperoxide into alpha-tetralone at a temperature of from about 0° to 90° C. in the presence of an added catalyst to the solution thus obtained, which catalyst comprises a mixture of (1) an iron salt selected from the group consisting of ferrous sulfate, ferrous ammonium sulfate, ferrous chloride, ferric chloride, ferrous nitrate and ferric nitrate, and (2) a copper salt selected from the group consisting of cuprous chloride, cupric chloride and cupric sulfate, the molar ratio of the iron salt to the copper salt in the mixture being in the range of from 0.1 to 10.

4,283,353

TAMPER PROOF SEALING PLUG

Robert J. Miller, Warren, Mich., assignor to Colt Industries Operating Corp, New York, N.Y.

Filed May 15, 1979, Ser. No. 39,192

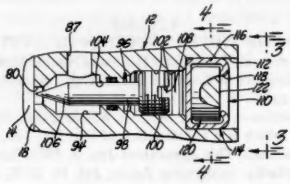
Int. Cl.[3] **F16K** *35/00;* **F16L** *55/10*

U.S. Cl. 261—41 D **15 Claims**

1. Closure means for effectively closing access passage

means to prevent unauthorized access through said passage means, said closure means comprising retainer means adapted to be fixedly retained within said passage means, and a closure member operatively retained by said retainer means against withdrawal of said closure member from said passage means, said closure member being rotatable with respect to said passage means and said retainer means, said retainer means comprising a cup-like caging member having an open end, said closure member being of generally annular configuration and received within said cup-like caging member, and said open end of said caging member being formed generally radially inwardly and over said closure member as to thereby preclude withdrawal of said closure member from said caging member.

8. A fuel metering system effective for metering the rate of fuel flow to an associated combustion engine, comprising body means, conduit means formed in said body means communicating with a source of fuel, orifice means formed generally in said body means for receiving fuel from said conduit means and discharging said fuel into induction passage means associated



with said engine, an opening formed in said body means, said opening receiving adjustably positionable valve means, said valve means being selectively adjustably positionable with respect to said orifice means in order to thereby cooperate with said orifice means in order to cooperatingly define an effective metering area for metering said rate of said fuel flow from said conduit means and to said induction passage means, and closure means received in said opening as to effectively close said opening to access to said valve means, said closure means comprising retainer means, and a closure member operatively retained by said retainer means against withdrawal of said closure member from said opening, said closure member being rotatable with respect to said retainer means, said retainer means comprising a cup-like caging member having an open end, said closure member being of generally annular configuration and received within said cup-like caging member, and said open end of said caging member being formed generally radially inwardly and over said closure member as to thereby preclude withdrawal of said closure member from said caging member.

4,283,354

CARBURETOR FOR INTERNAL-COMBUSTION ENGINES

Walter Schauer, Neuss, and Josef Rösgen, Grevenbroich, both of Fed. Rep. of Germany, assignors to Pierburg GmbH & Co. KG, Neuss, Fed. Rep. of Germany

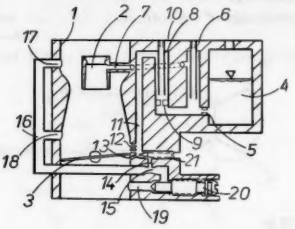
Filed Dec. 19, 1979, Ser. No. 105,472

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1978, 2855683

Int. Cl.[3] **F02M** *3/08*

U.S. Cl. 261—41 D **5 Claims**

1. Carburetor for internal-combustion engines, with a suction pipe with Venturi tube, in which the main injection system terminates, as well as with a randomly actuable throttle valve and a bypass line bypassing this throttle valve as well as with a no-load system which is supplied with emulsified fuel by an emulsifying system and which has bores terminating in the suction pipe in the region of the randomly actuable throttle valve, characterized in that the bypass line (**16**) has a constant non-adjustable narrow point (**15**) into which a channel (**14**) carrying emulsified fuel emerges and in that a bore (**13**) enters the suction pipe (**1**) from the no-load channel (**11**) at a point lying downstream of the closed, randomly actuable throttle valve, and further characterized by an adjusting screw (**20**) by which the cross section of the bypass line (**16**) is determined downstream of the narrow point (**15**) before it enters the suction pipe (**1**), whereby the cross sections of nozzles and bores



determining the supply of emulsified fuel through this bore (**13**) are adjusted so that the fuel supply is effected super-critically, while the cross sections determining the supply of emulsified fuel through the connecting channel (**14**) to the narrow point (**15**) of the bypass line are adapted so that the fuel supply into the bypass line is effected sub-critically.

4,283,355

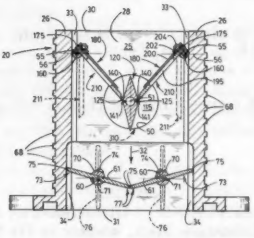
CARBURETOR

William H. Herd, Jr., Fresno; Stanley F. Curtis, Exeter; Vernon T. Mullican, and Robert W. Jones, both of Porterville, all of Calif., assignors to Pollution Controls Industries, Inc., Tulare, Calif.

Filed Sep. 24, 1979, Ser. No. 78,568

Int. Cl.[3] **F02M** *7/22*

U.S. Cl. 261—44 F **5 Claims**



1. In a carburetor adapted for connection to an internal combustion engine:

A. a housing having an elongated mixing passage adapted to have air drawn therethrough in a predetermined direction by the engine;

B. an elongated spray bar mounted transversely in the passage in substantially equally spaced relation to opposite sides thereof;

C. a pair of venturi plates;

D. substantially parallel shafts mounted in the housing on opposite sides of the spray bar, parallel thereto and upstream thereof individually mounting the venturi plates for pivotal movement between positions convergent downstream to the spray bar and positions pivoted outwardly from their convergent positions downstream on opposite sides of the spray bar, the spray bar having orifices therein oppositely disposed at positions adjacent to the venturi plates when in the convergent positions;

E. arms individual to the shafts oppositely radially extended from their respective shafts;

F. a pitman interconnecting the extended ends of the arms

for concurrent opposite pivotal movement of the venturi plates;

G. resilient means urging the plates into their convergent positions;

H. a source of fuel under pressure;

I. a plunger actuated valve having an intake connected to the source and an outlet connected to the spray bar;

J. a cam;

K. a journal substantially parallel to the shafts mounting the cam for rotation adjacent to the valve, said cam having an eccentric convex cam surface in engagement with the plunger of the valve whereby opposite rotation of the cam opens and closes the valve;

L. means mounting the journal for adjustable movement toward and from the plunger of the valve whereby the extent of opening and closing of the valve incident to the cam rotation is regulated;

M. a lever extended from one of the shafts adjacent to the cam;

N. a push-pull link pivotally interconnecting the lever and the cam for corresponding rotational movement; and

O. control means for rotating the cam to open and to close the valve in response to pivotal movement of the venturi plates to regulate the air-fuel mixture in the passage.

4,283,356

CARBURETOR FOR INTERNAL COMBUSTION ENGINES

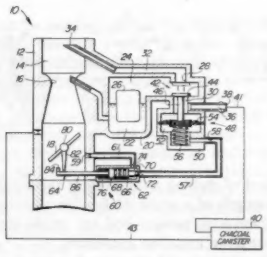
Hisaharu Arai, Nagoya, and Kunio Kadowaki, Oobu, both of Japan, assignors to Aisan Industry Co., Ltd., Ohbu, Japan

Filed Apr. 30, 1979, Ser. No. 34,669

Claims priority, application Japan, May 16, 1978, 53-57855

Int. Cl.³ F02M *5/08*

U.S. Cl. 261—72 R **5 Claims**



1. In a carburetor for an internal combustion engine having an intake passage with a throttle valve therein, a float chamber, a first vent passage extending between the float chamber and the intake passage and a second vent passage communicating between the float chamber and a fuel vapor absorption device wherein the improvement comprises first valve means operable between a first position when no vacuum is applied where the first passage is closed and the second passage is open and a second position when vacuum is applied, respectively, opening and closing the first and second passages, conduit means for operatively connecting said first valve means to said intake passage, second valve means located within said conduit means and operatively connected to said throttle valve for opening said conduit means when said throttle valve is closed and closing said conduit means when the throttle valve is opened to a predetermined degree so that said conduit means and said second valve means provide an open passage between the intake passage and said first valve means when said engine is off and a closed passage after said throttle valve opens a predetermined amount whereby vacuum applied along said conduit means is maintained therein after said second valve closes.

4,283,357

DEVICE FOR DISTRIBUTION OF A GAS IN A LIQUID MEDIUM

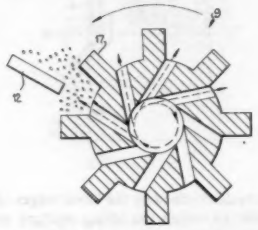
David Sidery, Trondheim, Norway, assignor to Trodhjems Mek. Versted A/S, Trondheim, Norway

Continuation of Ser. No. 12,737, Feb. 16, 1979, abandoned. This application Apr. 25, 1980, Ser. No. 143,893

Claims priority, application Norway, Feb. 28, 1978, 780694

Int. Cl.³ B01F *3/04*

U.S. Cl. 261—87 **8 Claims**



1. A rotatable rotor device for the introduction and dispersion of a gas in a liquid medium which comprises

an elongated boss portion having a top surface, a bottom surface and an outer side surface, as well as an axial hollow area therein for the introduction of air under pressure,

a number of spaced apart, radially-projecting wings connected to the outer side surface of said boss and extending between the top surface and bottom surfaces of said boss, each of said wings, when viewed in horizontal cross section, having a rectangular cross section, and

a separate air conduit extending between said hollow area in said boss and the outer side surface of said boss between each pair of wings, the exit mouth of each air conduit communicating with the outer surface of the boss immediately adjacent an associated wing, each exit mouth of each air conduit being positioned on a corresponding side of an associated wing, and each air conduit extending towards said hollow area and communicating therewith via an inner mouth such that a center line through each air conduit will intercept an imaginary radial line extending centrally through the associated wing adjacent to which the exit mouth of the air conduit is located.

4,283,358

ROTOR-CARBURETOR HAVING AN IDLING MIXTURE ARRANGEMENT FOR INTERNAL COMBUSTION ENGINES

Rudolf Diener, Zurich, Switzerland, assignor to Autoelektronik AG, Chur, Switzerland

Filed Jul. 16, 1980, Ser. No. 169,624

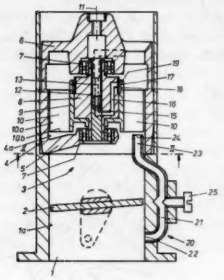
Claims priority, application Switzerland, Aug. 2, 1979, 7087/79

Int. Cl.³ F02M *17/16*

U.S. Cl. 261—88 **7 Claims**

1. A rotor-carburetor having an idling mixture arrangement for internal combustion engines with an impeller disposed in the suction port and put into rotation by the stream of intake air, which drives a rotor in the periphery of which at least one fuel outlet nozzle bore is provided which is connected with a fuel chamber in the rotor fed via a fixed fuel supply line with fuel and which delivers a quantity of fuel into the sucked in air being in an essentially linear relationship to the rpm of the impeller and with a throttle flap disposed in the suction port downstream from the impeller and serving for the regulation of quantities of the fuel mixture, characterized in that in the suction port **(1)**, there is at least one idling duct **(20)** bridging the throttle flap **(2)** in a closing position, which meets the suction port **(1)** downstream from the throttle flap **(2)** and

upstream from said suction port has a pipeshaped inlet (**23**) directed toward the impeller (**9**), with an inlet opening (**24**) lying in the marginal area of the inlet port (**1**) closely below the



rotational surfaces determined by the lower edges of the impeller (**10***b*), in order to enrich the idling mixture with fuel by increase of the rpm of the impeller for the idling throughput of air.

4,283,359

PROCESS FOR PRODUCING POLYACRYLONITRILE REVERSE OSMOTIC MEMBRANES

Nobuhiro Tsutsui; Seiji Takao, both of Okayama, and Ichiki Murase, Ibaraki, all of Japan, assignors to Japan Exlan Company Ltd. and Sumitomo Chemical Company, Ltd., both of Osaka, Japan

Filed Oct. 18, 1979, Ser. No. 85,957

Claims priority, application Japan, Oct. 23, 1978, 53-130628; Aug. 21, 1979, 54-106763

Int. Cl.[3] **B29D** *27/04;* **B29H** *7/20*

U.S. Cl. 264—22 **18 Claims**

1. A process for producing a polyacrylonitrile reverse osmotic membrane which comprises the steps of dissolving an acrylonitrile polymer in formamide-containing dimethylformamide to prepare an acrylonitrile polymer solution for membrane formation; shaping the polymer solution into a membranous product of a desired form while maintaining the temperature of the polymer solution above its gellation temperature; removing the solvent from the membranous product by bringing one side of the membranous product into contact with an aqueous solution of a temperature lower than 15° C. containing at least 10 weight % of a water-soluble solvent compatible with the mixed solvent, immediately or after bringing it once into contact with an inert atmosphere, and by bringing the other side of the membranous product into contact with an inert medium or an aqueous solution of a temperature higher than 0° C. containing not more than 50 weight % of a water-soluble solvent compatible with the above-mentioned mixed solvent, immediately or after bringing it once into contact with an inert atmosphere; subjecting the thus-obtained solidified membrane to a heat treatment at a temperature between 50° and 120° C.; and then subjecting the membrane to a plasma treatment.

4,283,360

PROCESS FOR PRODUCING MOLDED CERAMIC OR METAL

Ichiro Henmi; Akinori Noda, and Takuro Ono, all of Yokohama, Japan, assignors to Asahi Glass Company, Ltd., Tokyo, Japan

Filed Feb. 7, 1980, Ser. No. 119,440

Claims priority, application Japan, Feb. 28, 1979, 54-21997

Int. Cl.[3] **C04B** *35/64*

U.S. Cl. 264—63 **9 Claims**

1. In a process for producing a molded ceramic or metal by mixing a ceramic powder or metallic powder with a resin, molding the mixture and firing the molded product, the improvement consisting of:

blending an organic solvent soluble resin and an organic solvent insoluble resin as said resin which is mixed with a ceramic or metallic powder;

prior to firing, treating the molded product by immersion in a liquid organic solvent to dissolve said organic solvent soluble resin; and

then, firing the so-treated molded product to remove residual resin.

4,283,361

PREPARATION OF SHAPED ARTICLES OF POLY(METAPHENYLENE ISOPHTHALAMIDE)

Ruskin Longworth, Greenville, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 31, 1979, Ser. No. 108,794

Int. Cl.[3] **B29G** *1/00;* **C08G** *69/46*

U.S. Cl. 264—120 **7 Claims**

1. A process for the preparation of shaped articles having a tensile strength of at least about 14,800 psi from coalescible and densifiable powder of poly(methaphenylene isophthalamide) by heating the powder in a mold of the desired configuration to a temperature of about from 265° to 320° C. while simultaneously maintaining the powder under a pressure of about from 100 to 2500 psi.

4,283,362

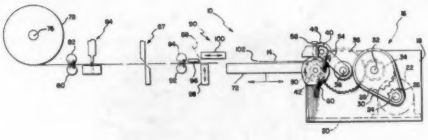
METHOD AND APPARATUS FOR MAKING A SELF-COILING SHEET

Nicholas Gold, Arlington, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Feb. 4, 1980, Ser. No. 117,874

Int. Cl.[3] **B29C** *17/02*

U.S. Cl. 264—160 **8 Claims**



1. A method of making a self-coiling sheet comprising:

cutting a length of a sheet of flexible material, capable of being given a permanent coil set, to the size required of said sheet in an uncoiled condition;

folding a section of said sheet back upon a portion of the remainder of said sheet so as to define a folded edge extending across the sheet and having a radius of curvature substantially equal to the thickness of said sheet; and

advancing said section of said sheet in a direction away from said folded edge of said sheet and toward the opposite end of said sheet while substantially maintaining said radius of curvature, whereby is produced a multi-layered generally cylindrical coil having a permanent set which may be uncoiled and, when left free, will automatically return to its coiled condition.

3. Apparatus for making a self-coiling sheet from a sheet of flexible material capable of being given a permanent coil set, comprising:

first and second elongate rollers mounted in juxtaposed relation so as to define a gap therebetween;

means for supporting a sheet of flexible material having a folded section at one end thereof which extends from a folded edge and is terminated by a free end of the sheet;

means for moving said supporting means toward said gap so as to deposit the sheet of flexible material between said rollers with the folded section of the sheet located in engagement with said first roller and with its free end

directed away from said first and second rollers and toward the opposite end of the sheet, and with the adjacent section of the remainder of the sheet located in engagement with said second roller; and

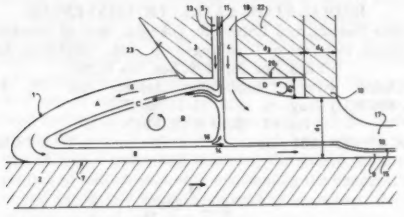
means for rotating said first roller in a direction so as to advance the folded section of the sheet in the direction of the opposite end of the sheet, and said second roller in a direction so as to advance the remainder of the sheet in the opposite direction, whereby is produced a multi-layered generally cylindrical coil having a permanent set which may be uncoiled and, when left free, will automatically return to its coiled condition.

4,283,363

PROCESS FOR MANUFACTURE OF PLASTIC SHEETS

Pierre Boudenant, Elisabethville, France; Heinz Scholl, Eschiveiler, Fed. Rep. of Germany, and Michel Zortea, Chalon sur Saone, France, assignors to Saint-Gobain Industries, Paris, France

Filed Nov. 21, 1979, Ser. No. 96,294
Claims priority, application France, Nov. 12, 1978, 78 33060
Int. Cl.³ B29D *7/02, 9/00*
U.S. Cl. 264—171 **17 Claims**



1. A method for making a sheet of plastic material, comprising continuously feeding a thin sheet-like flow of a liquid film-forming material onto a flat, moving substrate, said sheet-like flow being disposed transversely to the direction of movement of the substrate, forming a stable pocket of material on the substrate upstream from the zone at which the flowable material is introduced onto the substrate and controlling viscosity, pressure, flow rate of the material, and degree of adherence between the flowable material and the substrate, whereby all the material in the pocket is continuously in motion, establishing a continuous flow in the upper portion of the pocket in a direction essentially opposite the direction of movement of the substrate in order to come in contact with said substrate and be entrained by the latter in the direction of the movement, thus forming the lower portion of the sheet-forming layer, establishing a flow of material forming the central portion of the pocket between the upper and lower paths that continuously flows in a direction essentially transverse to the direction of substrate movement towards the edges of said substrate, and simultaneously establishing the flow of a direct stream of material from the material introduction zone in a downstream tangential relation to the pocket, in order to form the upper portion of the sheet-forming layer.

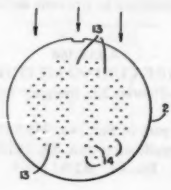
4,283,364

MELT SPINNING OF SYNTHETIC YARNS

Spencer W. Capps; Gerald E. Hagler, and Agaram S. Abhiraman, all of Asheville, N.C., assignors to Akzona Incorporated, Asheville, N.C.

Division of Ser. No. 793,504, May 4, 1977, Pat. No. 4,153,409. This application Dec. 20, 1978, Ser. No. 971,635
Int. Cl.³ D01D *5/08*
U.S. Cl. 264—176 F **15 Claims**

1. A process for melt spinning of polymers into synthetic yarns with a spinneret assembly including a spinning plate which comprises extruding a molten polymer downwardly through a spinning plate having a plurality of spinning orifices to form filaments of said polymer that extend vertically downwardly from said plate, arranging said filaments into a plurality of groups by providing the spinning plate with at least one open lane that is free of orifices and that extends across the operative area of the plate between the groups of orifices corresponding to the groups of filaments, said orifices being arranged in parallel rows in each group and said lane having a



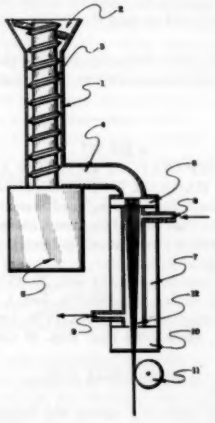
width wider than the distance between adjacent orifices within each of said groups, with the spinning plate having an average of from 2 to 10 orifices per (10 mm.)^2 of the operative area, and passing a cooling gas transversely between and through the groups of filaments in a direction parallel to a centerline of the lane whereby said filaments provide a yarn of a high filament count and of a low denier per filament count that exhibits a reduced degree of denier uneveness as compared with a yarn with the same filament count and denier produced by a conventional spinning plate having the same operative area.

4,283,365

PROCESS FOR MELT-SPINNING ACRYLONITRILE POLYMER FIBER USING VERTICALLY DISPOSED COMPRESSION ZONE

Chi C. Young, and Francesco DeMaria, both of Gulf Breeze, Fla., assignors to American Cyanamid Company, Stamford, Conn.

Filed Feb. 21, 1979, Ser. No. 13,352
Int. Cl.³ D01F *6/18*
U.S. Cl. 264—206 **4 Claims**



1. A process for preparing acrylonitrile polymer fiber which comprises continuously feeding a particulate composition of about 70 to about 95 weight percent of a fiber-forming acrylonitrile polymer and, correspondingly, from about 30 to about 5 weight percent of water into the top of a vertically disposed

compression zone operating at a compression ratio of greater than about 1:1 and less than about 1:3 and a temperature sufficient to provide a fusion melt at autogeneous pressure, said feeding being conducted at a rate which satisfies the operating capacity of said compression zone so as to provide a vapor seal, and extruding the resulting fusion melt from the bottom of said compression zone through a spinnerette assembly using the pressure generated within said compression zone, said extruding being directly into a steam-pressurized solidification zone maintained under conditions which control release of water from the nascent filaments to prevent deformation thereof.

4,283,366

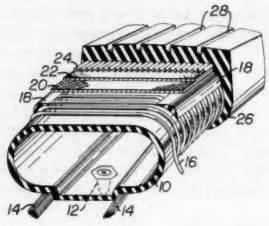
TIRE CURING METHOD

Charles E. Grawey, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Continuation-in-part of Ser. No. 965,533, Nov. 20, 1978, abandoned. This application Jun. 30, 1980, Ser. No. 164,648

Int. Cl.[3] **B29H** *5/02*

U.S. Cl. 264—502 **8 Claims**



1. A method of curing a green rubber tire having a closed interior cavity with two spaced ports extending from the interior cavity to the tire exterior comprising the steps of:

(a) forming the green rubber tire on a porous disintegratable core;

(b) positioning the green rubber tire within a pressure vessel;

(c) filling the pressure vessel and the interior cavity and porous core with a liquid at an elevated temperature which is sufficient to cure rubber;

(c) circulating liquid at the elevated temperature through the pressure vessel and around the exterior of the green rubber tire; and

(e) simultaneously circulating liquid at the elevated temperature through the porous core and the interior cavity of the tire.

4,283,367

PLANT FOR SEPARATING KRYPTON AND XENON FROM RADIOACTIVE WASTE GASES

Werner Koeppe; Josef Bohnenstingl, and Stanislaus G. J. Mastera, all of, Jülich, Fed. Rep. of Germany, assignors to Kernforschungsanlage Jülich Gessellschaft mit beschränkter Haftung, Jülich, Fed. Rep. of Germany

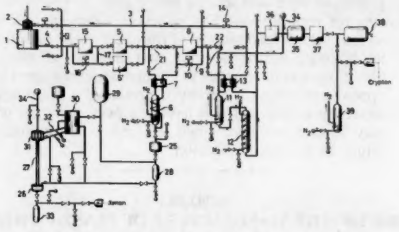
Continuation of Ser. No. 817,375, Jul. 20, 1977, abandoned, which is a division of Ser. No. 583,156, Jun. 2, 1975, Pat. No. 4,080,429. This application Apr. 16, 1979, Ser. No. 30,712

Claims priority, application Fed. Rep. of Germany, Jun. 1, 1974, 2426764

Int. Cl.[3] **G21F** *9/02*

U.S. Cl. 422—159 **10 Claims**

1. A system for removing xenon and krypton from a gas mixture which includes an inert carrier gas comprising: first, nitrogen cooled container means in a first freezing stage for first cooling the gas mixture to the temperature of boiling nitrogen to separate solid xenon from the gas mixture, compressor means to increase the pressure of the gas mixture after separation of xenon, and nitrogen cooled separator means in a second freezing stage to separate solid krypton from the gas mixture after pressure increase by said compressor means, so



that the xenon and krypton are solidified sequentially for separate collection.

4,283,368

RADIAL FLOW CATALYTIC CONVERTER

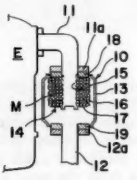
Setsuo Harada, and Katsuhiko Yokooku, both of Hiroshima, Japan, assignors to Toyo Kogyo Co., Ltd., Hiroshima, Japan

Filed Jun. 26, 1979, Ser. No. 52,917

Claims priority, application Japan, Jun. 27, 1978, 53/88978[U]; Aug. 16, 1978, 53/112680[U]

Int. Cl.[3] **B01J** *8/02;* **F01N** *3/28*

U.S. Cl. 422—181 **7 Claims**



1. A catalyic converter which comprises: an enclosure means having a generally cylindrical shape; a perforated outer sleeve positioned inside the enclosure means with an outer chamber defined between the enclosure means and said perforated outer sleeve; a perforated inner sleeve positioned inside the perforated outer sleeve in coaxial relation thereto and defining an annular intermediate chamber between said perforated outer and inner sleeves and defining an inner chamber within said inner sleeve; a bed of catalyst material in said intermediate chamber; a first port means connected with said inner chamber; and a second port means connected with said outer chamber; said first and second port means respectively being constituted by first and second annular flange members for being connected to a mating flange on a conduit member, said first annular flange member having a central opening defined therein and communicating with said inner chamber, said second annular flange member having a central opening defined therein and communicating with the outer chamber, said first annular flange member further having at least one aperture extending completely through the thickness thereof and opening into said annular intermediate chamber for charging said catalyst material into the annular intermediate chamber through said aperture, said aperture being positioned in said first annular flange for, when said first annular flange and a mating flange are connected, being closed by the mating flange.

4,283,369

APPARATUS FOR MAKING PITCH FIBER INFUSIBLE

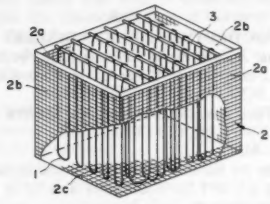
Hisatsugu Kaji; Iwawo Kameyama; Takashi Hamaguti, and Tamotsu Miyamori, all of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 51,191, Jun. 22, 1979. This application Jan. 2, 1980, Ser. No. 109,115

Claims priority, application Japan, Jun. 30, 1978, 53-78555

Int. Cl.[3] B01J *6/00;* C10C *3/14;* F27B *5/02, 5/06*

U.S. Cl. 422—193 1 Claim



1. An apparatus for making pitch fibers infusible, comprising:

a furnace for producing infusible materials holding a plurality of trays, each of said trays having side and bottom walls made of a metal net material and having an open upper end across which is placed a plurality of spaced bars for suspending said pitch fibers, said furnace having an inlet and an outlet;

at least two gas circulating means for exhausting gas heated during the infusibilization of said pitch from a lower portion of said furnace and returning the gas to an upper portion of said furnace, thus maintaining the temperature of the gas in said furnace constant in each part of said furnace, each of said gas circulating means comprising a blower or fan and a heat exchanger; and

a gas exchanging chamber adjacent to each of said inlet and said outlet.

4,283,370

METHOD OF QUANTITATIVELY SEPARATING URANIUM FROM SPECIMENS OF NATURAL WATER BY SORPTION ON SILICA

Alexander Putral, and Klaus Schwochau, both of Jülich, Fed. Rep. of Germany, assignors to Kernforschungsanlage Jülich, Gesellschaft mit beschränkter Haftung, Jülich, Fed. Rep. of Germany

Filed May 5, 1978, Ser. No. 903,079

Claims priority, application Fed. Rep. of Germany, May 10, 1977, 2720867

Int. Cl.[3] C22B *60/02;* C02B *1/28*

U.S. Cl. 423—6 3 Claims

1. A method of quantitatively separating uranium anions from test liquids either simulating natural sea water or test liquids of natural sea water, which method includes, in combination, the steps of: passing the test liquid directly without pretreatment over granular silica gel having an average grain diameter not exceeding 0.5 mm, while so selecting a throughflow speed of said test liquid that the contact time period for the said test liquid with said silica gel amounts to at least 50 seconds, and subsequently separating the uranium anions quantitatively adsorbed on said silica gel from the latter by elutriation with at least 0.1 normal oxidizing mineral acid, the volume of the utilized elutriate being selected to amount to at least about two times the volume of said silica gel.

4,283,371

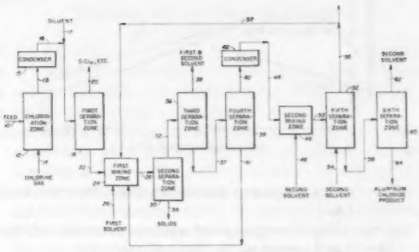
PROCESS FOR THE PRODUCTION OF ALUMINUM CHLORIDE AND RELATED PRODUCTS

Theodore A. Rado, Oklahoma City, Okla., assignor to Kerr-McGee Corporation, Oklahoma City, Okla.

Filed Jan. 28, 1980, Ser. No. 116,302

Int. Cl.[3] C01F *7/62*

U.S. Cl. 423—126 6 Claims



1. A process for producing substantially pure aluminum chloride comprising:

providing chlorination products of an aluminous ore containing iron and other impurities;

contacting said chlorination products with a first solvent to dissolve at least a portion of the chlorides present including at least a portion of the aluminum chloride present in said chlorination products to form a solution;

separating said solution from said undissolved chlorination products said solution containing aluminum chloride and at least one chloride of iron in a ratio essentially in proportion to their respective solubilities in the solvent;

separating said first solvent from said solution to leave a mixture of molten chlorides;

separating said mixture of molten chlorides into an aluminum chloride-rich stream and a second stream, said aluminum chloride-rich stream containing aluminum chloride in a ratio to any chloride of iron present in excess of the solubility ratio of the mixture of chlorides in a second solvent;

contacting said molten aluminum chloride-rich stream with the second solvent to dissolve aluminum chloride and at least a portion of the chlorides other than aluminum chloride contained in said molten aluminum chloride-rich stream and saturate the solvent with aluminum chloride to form a second solution said second solution being in admixture with aluminum chloride in excess of that which is soluble as a solid phase; and;

recovering said solid aluminum chloride from said second solution, said solid aluminum chloride being substantially pure aluminum chloride.

4,283,372

RECOVERY OF ALKALI VALUES FROM SODIUM BICARBONATE-CONTAINING ORE WITH AMMONIA

William R. Frint, Green River, Wyo.; William C. Copenhafer, Yardley, Pa., and Michael L. Pinsky, Mt. Holly, N.J., assignors to Intermountain Research and Devel. Corp., Green River, Wyo.

Continuation-in-part of Ser. No. 28,033, Apr. 9, 1979, abandoned. This application Jan. 29, 1980, Ser. No. 116,511

Int. Cl.[3] C22B *26/10;* C01D *7/00;* E21C *41/08*

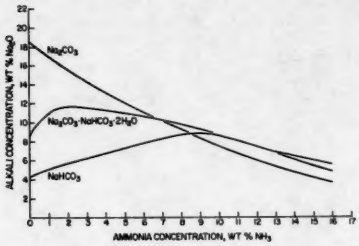
U.S. Cl. 423—206 T 19 Claims

1. A cyclic method for recovering alkali values from mechanically mined trona ore, which comprises

(i) contacting trona ore with an aqueous ammonia solvent containing about 0.5 to 4% by weight NH_3 to effect dissolution of sodium sesquicarbonate in the ore;

(ii) separating the resultant solution from the undissolved portion of the ore;

(iii) crystallizing alkali values from the separated solution;
(iv) recovering the crystallized solids from the solution, leaving a mother liquor;



(v) regenerating aqueous ammonia solvent from the mother liquor; and
(vi) recycling the regenerated aqueous ammonia solvent to step (i) and repeating the cycle of recovery.

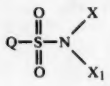
4,283,373

METHOD FOR REMOVAL OF SULFUR COMPOUNDS FROM A GAS

Kenneth J. Frech, Tallmadge, and James J. Tazuma, Stow, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Mar. 17, 1980, Ser. No. 130,897
Int. Cl.³ B01D *53/34*
U.S. Cl. 423—226 **11 Claims**

1. A process for removing hydrogen sulfide, mercaptans, sulfides and disulfides from a gas stream which comprises contacting said gas stream with a compound of the structural formula (I):


(I)

wherein Q is selected from the group comprised of alkyl radicals of 1 to 18 carbon atoms, cycloalkyl radicals of 4 to 18 carbon atoms, phenyl radical, mono and dialkyl substituted phenyl radicals wherein the alkyl substituents contain 1 to 6 carbon atoms; and wherein X is selected from the group comprised of chlorine, bromine or iodine radicals and X_1 is selected from the group comprised of chlorine, bromine, iodine, hydrogen, sodium, potassium and lithium radicals.

4,283,374

REGENERABLE MANGANESE OXIDE HOT GAS DESULFURIZATION PROCESS

Donald C. Erickson, 1704 S. Harbor La., Annapolis, Md. 21401

Filed Feb. 21, 1980, Ser. No. 123,376
Int. Cl.³ C01B *17/16, 31/20;* B01J *8/00;* C01B *17/00*
U.S. Cl. 423—230 **6 Claims**

1. A continuous regenerative process for desulfurizing a hot reducing gas comprising:
a. contacting the reducing gas with sorbent wherein the active sulfur absorbing component of the sorbent consists essentially of between 60% and 98% MnO and between 2% and 40% Mn_3O_4, whereby H_2S reacts with the sorbent to form MnS containing spent sorbent;
b. contacting the MnS containing spent sorbent with oxidized sorbent containing Mn_3O_4, wherein Mn_3O_4 is supplied in an amount between 2% and 30% greater than the stoichiometric amount necessary for reaction with the MnS content of the spent sorbent, whereby SO_2 is generated and the said sorbent is regenerated;
c. withdrawing the SO_2 at a controlled pressure between 1 and 30 atmospheres:
d. recycling between 10% and 40% of the regenerated sorbent to additional reducing gas contact;
e. contacting the remainder of the regenerated sorbent with a molecular oxygen containing gas, whereby the oxidized sorbent is obtained;
f. recycling the oxidized sorbent to additional contact with the spent sorbent.

4,283,375

PRODUCTION OF SiC WHISKERS

Ottis J. Horne, Jr., and David E. Ramsey, Jr., both of Johnson City, Tenn., assignors to Great Lakes Carbon Corporation, New York, N.Y.

Filed Jan. 28, 1980, Ser. No. 115,684
Int. Cl.³ C01B *31/36*
U.S. Cl. 423—345 **11 Claims**

1. A process for the manufacture of β-silicon carbide whiskers of about 0.5 to 1.5μ in diameter and 10 to 50μ length comprising the steps of:
(1) Ashing rice hulls in air at 400° to 700° C. to obtain amorphous SiO_2;
(2) Mixing finely powdered carbonaceous powder selected from the group consisting of the carbonized residue from heating rice hulls in nitrogen at temperatures between 400° and 700° C. and calcined petroleum coke with the SiO_2 obtained in Step 1; (3) Heating the above mixture in CO at 1 atmosphere pressure;
(4) When the above mixture reaches a carbide-forming temperature within the range of 1400° to 1600° C., flushing the container rapidly with an inert gas; and
(5) Maintaining a flow of inert gas for a time sufficient to form SiC whiskers.

4,283,376

METHOD OF PRODUCING SILICON CARBIDE FIBERS

Seishi Yajima; Kiyohito Okamura, and Yoshio Hasegawa, all of Oharai, Japan, assignors to The Research Institute for The Foundation: Special Inorganic Materials, Asahi, Japan

Division of Ser. No. 953,518, Oct. 23, 1978, Pat. No. 4,220,600. This application Jun. 12, 1979, Ser. No. 47,845
Claims priority, application Japan, Oct. 26, 1977, 52-127629; Oct. 26, 1977, 52-127630; Dec. 10, 1977, 52-148488
Int. Cl.³ C01B *31/36*
U.S. Cl. 423—345 **9 Claims**

1. A process for producing continuous silicon carbide fibers composed mainly of SiC, which comprises
(1) preparing polycarbosilane partly containing siloxane bonds by adding 0.01 to 15% by weight of polyborosiloxane having phenyl groups in at least a part of the side chains of Si with its skeletal structure being composed of B, Si and O to a polysilane having the structure

wherein n is at least 3, and R_1 and R_2, independently from each other, represent methyl, ethyl, phenyl of hydrogen; and heating the polymer mixture in an atmosphere inert to the reaction thereby to polymerize said polymer mixture,
(2) preparing a spinning dope of the polycarbosilane and spinning the dope,
(3) subjecting the result fibers to a treatment of rendering them infusible under tension or under no tension, and
(4) firing the treated fibers at a temperature of from 800° to 1800° C. in vacuum or in an inert gaseous atmosphere.

9. Continuous silicon carbide fibers composed of ultrafine particles of amorphous SiC and/or β-type SiC crystals, said fibers having superior thermal stability, oxidation resistance

and acid resistance and having the composition, by weight, of Si:50–70 C: 30–40, O: 0.01–10, H: not more than 0.01, and B: not more than 500 ppm, a specific gravity of 2.3 to 3.1, a tensile strength of 200 to 500 kg/mm^2 and a modulus of elasticity of 15 to 40 tons/mm^2 prepared according to the process of claim 7 at a firing temperature of 1,000° to 1,500° C.

4,283,377

PROCESS FOR THE PREPARATION OF BASIC ZIRCONIUM CARBONATE OF HIGH PURITY

Jürgen Fenner, Essen, Fed. Rep. of Germany, assignor to Th. Goldschmidt AG, Essen, Fed. Rep. of Germany

Filed Jun. 26, 1980, Ser. No. 163,406

Claims priority, application Fed. Rep. of Germany, Jul. 5, 1979, 2927128

Int. Cl.^{3} C01B *31/24, 17/90*

U.S. Cl. 423—419 P **14 Claims**

1. A process for the preparation of high purity basic zirconium carbonate comprising:

(a) precipitating basic zirconium sulfate by adding a compound selected from the group consisting of alkali or ammonium carbonate and alkali or ammonium hydrogen carbonate to an aqueous solution of zirconium sulfate and separating the precipitate from the mother liquor;

(b) dissolving the basic zirconium sulfate from step (a) at temperatures not more than about 40° C. in a 0.3 N to 1 N HCl solution such that 0.5 to 1.5 liters of HCl solution is used for each mole of zirconium sulfate used in step (a), and then heating the solution to a temperature of at least 45° C. to reprecipitate the basic zirconium sulfate and separating the precipitate; and

(c) suspending the basic zirconium sulfate in water to which the stoichiometric amount of a compound selected from the group consisting of alkali or ammonium carbonate and alkali or ammonium hydrogen carbonate is added and removing the basic zirconium carbonate formed from the solution wherein said basic zirconium carbonate contains substantially less impurities, based on the zirconium oxide content, than were present in the zirconium sulfate solution of step (a).

4,283,378

PRODUCTION OF HIGH SURFACE AREA CARBON BLACKS

Barrie J. Yates, Andover, Mass., and Ronald C. Hurst, Pampa, Tex., assignors to Cabot Corporation, Boston, Mass.

Filed Aug. 1, 1979, Ser. No. 62,727

Int. Cl.^{3} C01B *31/02;* C09C *1/48*

U.S. Cl. 423—456 **6 Claims**

1. In a modular process for producing furnace carbon blacks having higher than normal surface areas wherein a fuel and an oxidant are reacted in a first zone so as to provide a stream of hot primary combustion gases possessing sufficient energy to convert a carbon black-yielding liquid hydrocarbon feedstock to carbon black, and wherein in a second zone the liquid hydrocarbon feedstock is peripherally injected, in the form of a plurality of coherent jets, into the stream of gaseous combustion products in a direction substantially transverse to the direction of flow of the stream of combustion gases and under sufficient pressure to achieve the degree of penetration required for proper shearing and mixing of the feedstock, and wherein in a third zone the feedstock is decomposed and converted into carbon black prior to termination of the carbon forming reaction by quenching, and then cooling, separating and recovering the resultant carbon black, the improvement which comprises introducing water, in the form of vapor, in an amount of from about 4 to 15% by volume based on the total gaseous volume of the fuel and oxidant utilized in preparing the primary combustion, into the first zone such that the water vapor is well mixed with the stream of gaseous combustion products prior to the introduction of the liquid feedstock, and maintaining the carbon black forming reaction in the third zone for a residence time of at least 0.5 seconds, and operating the process under conditions such that the overall percent combustion thereof ranges from about 40 to about 60 percent.

4,283,379

METHOD FOR REMOVING HYDROGEN SULFIDE FROM GAS STREAMS

Donald M. Fenton, Anaheim, and Hugh W. Gowdy, Irvine, both of Calif., assignors to Union Oil Company of California, Brea, Calif.

Filed Jun. 20, 1979, Ser. No. 50,192

Int. Cl.^{3} C01B *17/04*

U.S. Cl. 423—571 **21 Claims**

1. A method for removing hydrogen sulfide from a hydrogen sulfide-containing gas stream and converting said hydrogen sulfide to elemental sulfur, which comprises:

(a) contacting said gas stream with a regenerable washing solution so as to absorb said hydrogen sulfide into said washing solution, the washing solution introduced into contact with said gas stream comprising a substantially quinone-free aqueous solution having a pH between about 5 and about 10 and containing (1) solubilized vanadium, (2) one or more water-soluble nonquinone aromatic compounds capable of solubilizing tetravalent vanadium, (3) thiocyanate ions and (4) a water-soluble carboxylate complexing agent;

(b) allowing the absorbed hydrogen sulfide to react with constituents of said washing solution so as to convert said absorbed hydrogen sulfide substantially exclusively to elemental sulfur;

(c) oxidatively regenerating the washing solution from step (b) so as to form a regenerated washing solution; and

(d) separating said elemental sulfur from said washing solution.

4,283,380

PROCESS AND INSTALLATION FOR DESULPHURIZING GASES CONTAINING SO_2

Robert Voirin, Mourenx; Pierre Mathieu, Orthez, and Claude Chambu, Billere, all of France, assignors to Societe Nationale Elf Aquitaine (Production), France

Filed Oct. 12, 1976, Ser. No. 731,654

Claims priority, application France, Oct. 10, 1975, 75 31162; Oct. 4, 1976, 76 29756

Int. Cl.^{3} C01B *53/34*

U.S. Cl. 423—574 R **11 Claims**

1. A process for desulphurizing gases containing SO_2 and SO_3, O_2 and nitrogen oxide by absorption of the sulphur containing compounds by means of an absorbent comprising contacting said gas with an activated alumina free of alkaline substances absorbent at a temperature between 100° and 400° C., heating the resulting absorbent loaded with said compounds in the form of alumina sulphates with a reducing gas at a temperature of 250° C. to 450° C., separating the elementary sulphur thus formed from said absorbent, and thereafter reusing the absorbent in a subsequent absorption operation.

4,283,381

TRIIODINATED AMINOACETAMIDO ISOPHTHALAMIDE X-RAY CONTRAST AGENTS

Ulrich Speck; Erich Klieger, and Wolfgang Mützel, all of Berlin, Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin, Fed. Rep. of Germany

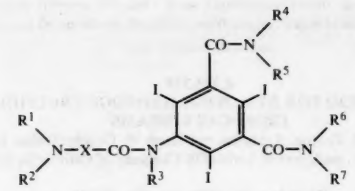
Filed Jul. 11, 1980, Ser. No. 167,597

Claims priority, application Fed. Rep. of Germany, Jul. 12, 1979, 2928417

Int. Cl.^{3} A61K *49/04;* C07C *103/183, 103/50*

U.S. Cl. 424—5 **12 Claims**

1. A 5-amino-2,4,6-triiodoisophthalic acid bisamide of the formula



(I)

wherein

X is C_{1-5}-alkylene, optionally substituted by hydroxy, methoxy or amino;

R^1 is hydroxy or C_{1-4}-alkyl;

R^2 is hydrogen, C_{1-4}-alkyl, or C_{2-4}-alkyl substituted by 1–3 OH groups;

R^3 is hydrogen, C_{1-4}-alkyl, or C_{2-4} alkyl substituted by 1–3 OH groups;

R^4 is hydrogen, C_{1-4}-alkyl, or C_{2-4}-alkyl substituted by 1–4 OH groups;

R^5 is C_{2-4}-alkyl substituted by 1–3 OH groups;

R^6 is hydrogen, C_{1-4}-alkyl or C_{2-4}-alkyl substituted by 1–3 OH groups; and

R^7 is C_{2-4}-alkyl substituted by 1–3 OH groups,

or a salt thereof with an acid which is an opaquing agent for x-ray contrast media.

12. A method of rendering a body part of a host visualizable by x-rays, which comprises administering to the host an amount of a compound of claim **1** effective as an x-ray opaque agent for the body part to be visualized.

4,283,382

FLUORESCENT LABELS COMPRISING RARE EARTH CHELATES

David S. Frank, Rochester, and Michael W. Sundberg, Penfield, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 865,274, Dec. 28, 1977, abandoned. This application Oct. 18, 1978, Ser. No. 952,424

Int. Cl.[3] **G01N** *31/00, 31/22, 33/48, 33/00*

U.S. Cl. 424—8 **4 Claims**

1. An aqueous-stabilized fluorescent label comprising fluorescent rare earth chelate incorporated into polymeric beads derived from a loaded latex wherein said rare earth chelate comprises up to about 7.5 percent by weight of said beads and said loaded latex has a polymeric discontinuous phase which consists essentially of polymer polymerized from one or more ethenic monomers and has an aqueous continuous phase and exhibits essentially no visible coagulation or settling out when 250 ml of the latex containing from about 10 to about 20 weight percent dispersed phase is stirred at 25° C. into an equal volume of acetone over a 1 minute period and subsequently allowed to stand at about 25° C. for 10 minutes.

4,283,383

ANALYSIS OF BIOLOGICAL FLUIDS

Pierre L. Masson, Brussels, and Joseph F. Heremans, Leuvain, both of Belgium, assignors to Technicon Instruments Corporation, Tarrytown, N.Y.

Division of Ser. No. 578,699, May 19, 1975, Pat. No. 4,143,124. This application Sep. 27, 1978, Ser. No. 946,173

Claims priority, application United Kingdom, May 20, 1974, 22377/74

Int. Cl.[3] **G01N** *33/54*

U.S. Cl. 424—12 **16 Claims**

1. A reagent useful in biological analysis which comprises RF or Clq covalently bonded to a solid phase substrate which is insoluble in aqueous fluids.

10. A method of competitive binding assay by which the presence, in a sample, of a particular antibody, antigen or antibody -antigen complex may be detected, and the amount thereof determined, which comprises the steps of:

(a) adding to the sample to form a mixture a quantity of the specific antigen or antibody for the antibody or antigen, respectively, to be determined, or a quantity of the antibody -antigen complex to be determined, which said quantity carries an identifying label;

(b) contacting the mixture with a reagent substance selected from the group consisting of RF and Clq, said substance being adsorbed onto a solid phase substrate which is insoluble in aqueous fluids;

(c) separating the reagent substance from the mixture; and

(d) measuring by the identifying label the amount of labelled antibody, antigen, or antibody -antigen complex remaining in the mixture or separated with the reagent, thereby determining the presence and amount of antibody, antigen or antibody -antigen complex in the original sample.

4,283,384

COSMETIC COMPOSITIONS CONTAINING POLYMERS PRODUCED IN THE PRESENCE OF CERIUM IONS

Bernard Jacquet, Antony; Jean Mondet, Sevran, and Christos Papantoniou, Montmorency, all of France, assignors to L'Oreal, Paris, France

Continuation-in-part of Ser. No. 740,015, Nov. 8, 1976, abandoned. This application Jan. 23, 1979, Ser. No. 5,919

Int. Cl.[3] **A61K** *7/043, 7/06, 7/08, 7/11*

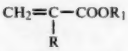
U.S. Cl. 424—47 **10 Claims**

1. A shampoo composition comprising an aqueous solution of a polymer produced by polymerizing an unsaturated monomer selected from the group consisting of

(a) acrylic acid,

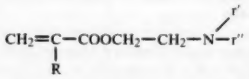
(b) methacrylic acid

(c) an ester of the formula



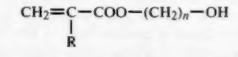
wherein R is hydrogen or methyl, and R_1 is linear or branched alkyl having 1–18 carbon atoms,

(d) an ester of the formula



wherein R has the same meaning given above and r′ and r″ each independently represent alkyl having 1–5 carbon atoms and corresponding quaternary esters thereof,

(e) an ester of the formula

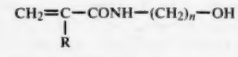


wherein R has the same meaning given above and n is 2 or 3,

(f) acrylamide,

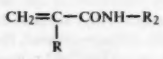
(g) methacrylamide,

(h) hydroxy alkylacrylamide of the formula



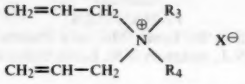
wherein R has the same meaning given above and n is 1–3,

(i) a compound of the formula



wherein R has the same meaning given above and R_2 represents linear or branched alkyl having 1–5 carbon atoms, and

(j) a compound of the formula



wherein R_3 and R_4 each independently represent linear or branched alkyl having 1–16 carbon atoms and X is Cl or Br,

with about 15 to 95 percent by weight of a compound based on the combined weight of said unsaturated monomer and said compound and selected from the group consisting of

(1) a product selected from the group consisting of gelatin, cellulose, starch, collagen, chitosans, nitro-cellulose and cellulose ethers,

(2) a polymer selected from the group consisting of polyvinyl alcohol, hydrolyzed polyvinyl acetate, hydrolyzed copolymer of N-vinylpyrrolidone and vinyl acetate, hydrolyzed copolymer of crotonic acid and vinyl acetate, polyvinylpyrrolidone having terminal OH groups, polyacrylamide having terminal OH groups, N,N-dimethyl-2-amino ethyl methacrylate having terminal OH groups and quaternized with ethyl bromide, polybutadiene having terminal OH groups, polyisobutylene having terminal OH groups, copolymer of N-vinylpyrrolidone and N-methacryloyl D-glucosamine and copolymer of N-vinylpyrrolidone and N-methacryloyl D-glucosamine having terminal OH groups,

(3) a polymeric compound selected from the group consisting of polyethylene glycol and polypropylene glycol, and

(4) pentaerythritol,

said polymerization being carried out in an aqueous medium and in the presence of cerium ammonium nitrate at a temperature between ambient temperature and 80° C.,

and a cationic, nonionic or anionic detergent, said detergent being present in an amount between 5 and 50 weight percent of said composition and said polymer being present in an amount between 0.1 and 10 weight percent of said composition.

4,283,385

DENTIFRICES WITH IMPROVED SOLUBLE FLUORIDE AVAILABILITY

Dadi J. Dhabhar, Norwalk, Conn., and Nutan B. Shah, New Rochelle, N.Y., assignors to Richardson-Merrell Inc., Wilton, Conn.

Filed May 9, 1980, Ser. No. 148,548
Int. Cl.³ A61K *7/18*
U.S. Cl. 424—52 **8 Claims**

1. A dentifrice comprising from about 0.1 to about 5% by weight of a water-soluble fluoride, from about 5 to about 60% by weight of a calcium abrasive and from about 0.01 to about 5% by weight of ethylenediamine tetraacetic acid or sodium salt thereof.

4,283,386

METHOD FOR HAIR CARE

Eugene J. Van Scott, 1138 Sewell La., Rydal, Pa. 19046, and Ruey J. Yu, 4 Lindenwold Ave., Ambler, Pa. 19002

Division of Ser. No. 949,536, Oct. 10, 1978, Pat. No. 4,224,339.
This application Nov. 23, 1979, Ser. No. 96,678
Int. Cl.³ A61K *7/06*
U.S. Cl. 424—70 **7 Claims**

1. A method for hair grooming comprising topically applying to the hair a cosmetically effective amount of a composition containing from about 0.2 to 10% by weight of at least one compound selected from the group consisting of cysteic acid, cysteine sulfinic acid and homocysteic acid and chelates of said compound with at least one metallic compound selected from the group consisting of ferric chloride, copper sulfate, cooper carbonate, zinc sulfate, zinc oxide, zinc chloride, aluminum chlorohydrate, and aluminum zinc sulfate.

5. A method for hair grooming comprising topically applying to the hair a cosmetically effective amount of a composition containing from about 0.2 to about 10% by weight of at least one compound selected from the group consisting of a reaction product of cysteic acid, cysteine sulfinic acid and homocysteic acid and a base selected from the group consisting of an organic primary, secondary, or tertiary alkylamine, alkanolamine, diamine, dialkylamine, dialkanolamine, alkylalkanolamine, trialkylamine, trialkanolamine, dialkylalkanolamine, or alkydialkanolamine wherein the alkyl or alkanol substituent has from 1 to 10 carbon atoms, an organic quaternary ammonium hydroxide compound, sodium hydroxide, and potassium hydroxide.

4,283,387

ADHERENT CONTROLLED RELEASE PESTICIDE

Robert W. Young, New York, N.Y.; Samuel Prussin, Big Sur, Calif., and Norman G. Gaylord, New Providence, N.J., assignors to Young, Prussin, MGK, J.V., New York, N.Y.

Filed Nov. 8, 1979, Ser. No. 92,632
Int. Cl.³ A01N *25/24*
U.S. Cl. 424—78 **10 Claims**

1. A composition capable of undergoing hydrolysis under ambient conditions to form a polymeric network capable of controlling the release of an insecticide consisting essentially of:

(a) a carbinol-containing organic polymer;

crosslinking agents for said polymer comprising (b) a hydrolyzable silane selected from the group consisting of (1) a hydrocarbon substituted hydrolyzable silane, (2) an organopolysiloxane containing hydrolyzable silane groups and (3) a partial hydrolyzate of (1) and/or (2), and (c) a hydrolyzable titanium compound or a partial hydrolyzate thereof, said titanium compound being selected from the group consisting of tetraesters, tetraanhydrides, tetraamides and chelates of glycols, hydroxy acids, dicarboxylic acids, diketones, ketoesters and alkanolamines, and

(d) a pesticide.

4,283,388

METHOD FOR TREATING COLIBACILLOSIS IN PIGS WITH TYLOSIN APRAMYCIN COMPOSITIONS

Earl E. Ose, Greenfield, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Dec. 26, 1979, Ser. No. 107,240
Int. Cl.³ A61K *35/00*
U.S. Cl. 424—114 **11 Claims**

1. A method for treating colibacillosis in post-weanling pigs in need of said treatment which comprises administering to said pigs in an amount effective to treat collibacillosis of an antibiotic composition comprising tylosin and apramycin or physiologically acceptable salts thereof wherein said composition contains a ratio by weight of tylosins to apramycin of about 5:1 to about 1:5.

4,283,389
NOVEL ANTIBIOTIC, BN-183B SUBSTANCE

Norio Ezaki; Shinji Miyadoh; Yasuaki Ogawa; Takashi Hisamatsu, all of Yokohama; Harumi Fukuyashu, Yokosuka, and Yujiro Yamada, Yokohama, all of Japan, assignors to Meiji Seika Kaisha Ltd., Tokyo, Japan

Filed Dec. 19, 1979, Ser. No. 105,442
Claims priority, application Japan, Dec. 27, 1978, 53-159820
Int. Cl.[3] A61K *35/00*
U.S. Cl. 424—116 **2 Claims**

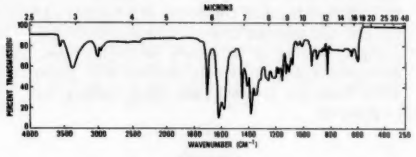
1. An antibiotic designated BN-183B substance whose hydrochloride has the following characteristics or a pharmaceutically acceptable salt thereof

(1) Elemental analysis values: C 39.84%, H 5.25%, N 6.43%, Cl 22.90%
(2) Molecular weight: 383
(3) Molecular formula: $C_{14}H_{20}N_2O_6Cl_2.HCl$
(4) Melting point: begins to turn brownish at 190° C. and to foam and decompose at 214° C.
(5) Ultraviolet absorption spectrum: shown in FIG. **1**
(6) Infrared absorption spectrum: Absorption bands at 3400, 3020, 1680, 1620, 1570, 1520, 1400, 1360, 1330, 1270, 1240, 1180, 1160, 1130, 1090, 1080, 1020, 930, 880, 850, 830, 800, 740, 700 cm^{-1} and absorption spectrum as shown in FIG. **2**.
(7) Specific rotation: $[\alpha]_D^{23}$ −9° (c=1, water)
(8) Solubility: very soluble in water, slightly soluble in methanol, and scarcely soluble in acetone, chloroform and ethyl acetate
(9) Color reactions:
Positive: ferric chloride, ninhydrin and Fehling
Negative: Molish and biuret
(10) Distinction by neutrality, acidity and basicity: behaves as a basic substance in filter paper electrophoresis
(11) Appearance: white to slightly yellowish powder
(12) Rf values in thin-layer chromatography:
Butanol-acetic acid-water (2:2:1): 0.66
Ethyl acetate-acetic acid-water (60:17:17): 0.34
Butanol-pyridine-acetic acid-water (6:4:1:3): 0.65.

4,283,390
ANTIBIOTICS AND PROCESS FOR PRODUCTION THEREOF

Kay F. Koch, North Salem, and Ralph E. Kastner, Indianapolis, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Nov. 1, 1979, Ser. No. 90,386
Int. Cl.[3] A61K *35/00*
U.S. Cl. 424—122 **6 Claims**



1. Antibiotic A-39183 factor C, which is a yellow crystalline solid having the following characteristics:

(a) an approximate elemental composition of 68.03 percent carbon, 4.78 percent hydrogen, and 26.58 percent oxygen;
(b) a molecular weight of about 598, as determined by mass spectrometry;
(c) an infrared absorption spectrum with the following significant absorption maxima (cm^{-1}): 3498, 3420, 2970, 2930, 2861, 1971, 1717, 1701, 1623, 1599, 1585, 1452, 1414, 1357, 1335, 1312, 1261, 1223, 1172, 1151, 1122, 1086, 1041, 1011, 980 (shoulder), 970, 955, 938, 905, 879, 870 (shoulder), 851, 801, 781, 750 (shoulder), 740, 692, and 666;
(d) ultaviolet absorption spectra in acidic or neutral methanol with absorption maxima at 226 nm (ε44,200), 268 nm (ε55,600), 300 nm (s) (ε6,200), 310 (s), (ε5,300), 327 nm (ε5,900), and 410 nm (ε13,800); and in basic methanol with absorption maxima at 229 nm (ε50,100), 226 nm (ε49,200), 328 nm (s) (ε11,000), 340 nm (ε11,900), and 420 nm (ε17,000);
(e) is soluble in acetone, ethyl acetate, dimethylformamide, dimethyl sulfoxide, trifluoroethanol, the lower alkanols, is sparingly soluble in benzene and toluene, and insoluble in water; and
(f) an R_f value of approximately 0.46 on silica-gel thin layer chromatography using a toluene:acetone (3:1) solvent system.

4,283,391
PAMAMYCIN

Burton M. Pogell, St. Louis, Mo., and Pamela A. McCann, Flemington, N.J., assignors to St. Louis, University, St. Louis, Mo.

Continuation-in-part of Ser. No. 964,952, Nov. 30, 1978, abandoned. This application Jul. 16, 1979, Ser. No. 57,795
Int. Cl.[3] A61K *35/00*
U.S. Cl. 424—122 **1 Claim**

1. Pamamycin which has an elemental composition of $C_{36}H_{63}NO_7$ and is defined by an NMR spectrum containing no exchangeable hydrogens, a multiplet centered at approximately 0.9 ppm indicating methyl groups, and multiplets in the range between 1.25–2.0 ppm and 2.0–2.75 ppm showing that the bulk of the hydrogen is methine and methylene groups and finally a triplet at 1.1 ppm indicating loss of a propyl group and being characterized by an IR spectrum which is highly aliphatic and showing an absence of aromatic, —OH, and —NH groups, further characterized by a peak at 1725 cm^{-1} indicating a carbonyl group and further characterized by no amide 1 and amide 2 stretch bands (1600–1700 cm^{-1}) indicating the nitrogen present is as a tertiary linkage.

4,283,392
INFUSION SOLUTIONS CONTAINING AMINO ACIDS AND MINERAL SALTS

Günther Dietze, and Matthias Wicklmayr, both of Munich, Fed. Rep. of Germany, assignors to THERA Gesellschaft fur Patentverwertung mbH, Fed. Rep. of Germany

Filed Jan. 22, 1980, Ser. No. 114,241
Claims priority, application Switzerland, Jan. 23, 1979, 644/79
Int. Cl.[3] A61K *37/00*
U.S. Cl. 424—177 **5 Claims**

1. An infusion solution for low-caloric parenteral nutrition, comprising 10 to 200 grams of essential and non-essential amino acids per liter of solution, 50 to 10,000 μg of a kinin selected from the group consisting of Brady kinin, kallidin or mixtures thereof per liter of solution and mineral salts.

5. A method of treating a patient to preserve the depot proteins which comprises parenteral administration to said patient of an effective amount of the infusion solution of claim **1**.

4,283,393
TOPICAL APPLICATION OF INTERFERON INDUCERS

Arthur K. Field, North Wales, and Richard J. Harwood, Philadelphia, both of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Mar. 13, 1979, Ser. No. 20,125
Int. Cl.[3] A61K *31/70*
U.S. Cl. 424—180 **8 Claims**

1. An improved method of treating virus infections of skin, eye and mucous membrane tissue susceptible to treatment with interferon by topically applying a therapeutically effective antiviral amount of an interferon inducer selected from the group consisting of synthetic double-stranded RNA, a natural double-stranded RNA, and a nonpolynucleotide, the improve-

ment consisting of incorporating said interferon inducer and a water soluble polymer selected from the group consisting of cellulose ethers, polyvinyl alcohol, polyvinylpyrrolidone, carboxyvinylpolymer and polyethylene glycol.

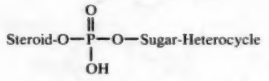
4,283,394

CYTOTOXIC NUCLEOSIDE-CORTICOSTEROID PHOSPHODIESTERS

Charles R. West, East Amherst, and Chung I. Hong, Williamsville, both of N.Y., assignors to Research Corporation, New York, N.Y.

Filed Aug. 6, 1979, Ser. No. 63,753
Int. Cl.³ C07J *17/00*
U.S. Cl. 424—182 **19 Claims**

1. A compound selected from the group consisting of compounds of the formula:



wherein:

steroid is a 21-hydroxy-1,4-pregnadiene-3,20-dione; 21-hydroxy-1,4-pregnadiene-3,11,20-trione; 21-hydroxy-4-pregnene-3,20-dione or 21-hydroxy-4-pregnene-3,11,20-trione which is unsubstituted or substituted by 1-3 hydroxy, methyl or fluoro groups at the 2α, 6α, 9α, 11, 16α, 17 or 18 positions and which is esterified to the phosphate moiety at the 21-position;

sugar is ribose, deoxyribose, lyxose, xylose or arabinose which is esterified to the phosphate moiety at the 5'-position and covalently bonded to the heterocycle moiety at the 1'-position to form a nucleoside; and

heterocycle is a purine, pyrimidine, hydrogenated pyrimidine or triazolopurine nucleoside base;

and the physiologically acceptable salts thereof.

12. A compound according to claim **1**, 5'-(prednisolone-21-phosphoryl)-1-β-D-arabinofuranosylcytosine.

19. A method for inhibiting the growth of cancer cells in a living body, which comprises administering a safe and cytotoxically effective amount of a compound according to any one of claims **12** thru **17** to a living test animal afflicted with cancer susceptible.

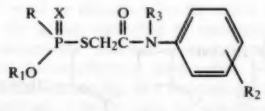
4,283,395

S-ALKYL AND ALKENYL-THIOPHENYLACETAMIDO THIOPHOSPHATES AND PHOSPHONATES AND METHOD OF CONTROLLING INSECTS

Llewellyn W. Fancher, New Castle, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

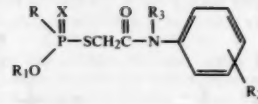
Filed Mar. 24, 1980, Ser. No. 133,066
Int. Cl.³ C07F *9/165*; A01N *57/06*
U.S. Cl. 424—211 **6 Claims**

1. A compound having the formula



in which R is lower alkyl or lower alkoxy; R_1 is lower alkyl; R_2 is thio-lower alkenyl; R_3 is hydrogen and X is oxygen or sulfur, provided that when X is oxygen, R is lower alkoxy.

5. A method for controlling insects comprising applying to the insects, the habitat thereof, or a locus where protection is desired, an insecticidally effective amount of a compound having the formula



in which R is lower alkyl or lower alkoxy; R_1 is lower alkyl; R_2 is thio-lower alkenyl; R_3 is hydrogen and X is oxygen or sulfur; provided that when X is oxygen, R is lower alkoxy.

4,283,396

3-ACETOXYMETHYL-7-(HYDROXYIMINOACETAMIDO)-CEPHALOSPORANIC ACID DERIVATIVES

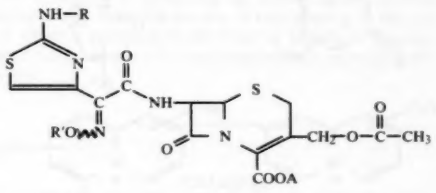
Rene Heymes, Romainville, and Andre Lutz, Strasbourg, both of France, assignors to Roussel Uclaf, Paris, France

Division of Ser. No. 817,114, Jul. 19, 1977, Pat. No. 4,152,432, which is a continuation-in-part of Ser. No. 761,270, Jan. 21, 1977, abandoned. This application Jun. 22, 1978, Ser. No. 917,985

Claims priority, application France, Jan. 23, 1976, 76 01834; Jun. 11, 1976, 76 17743; Aug. 18, 1976, 76 25050; Mar. 11, 1977, 77 07307

Int. Cl.³ A61K *31/545*; C07D *501/34*
U.S. Cl. 424—246 **14 Claims**

1. A compound of the formula



wherein R is hydrogen, R' is hydrogen, A is selected from the group consisting of hydrogen, alkali metal and equivalent of an alkaline earth metal, magnesium and a pharmaceutically acceptable organic amine base and the wavy line means the OR' group is in the syn position.

5. An antibiotic composition comprising an antibiotically effective amount of at least one compound of claim **1** and an inert pharmaceutical carrier.

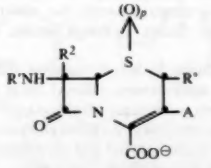
4,283,397

7-N-HETEROCYCLYL CEPHALOSPORINS AND ANTIBIOTIC PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

John Hannah, Matawan, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

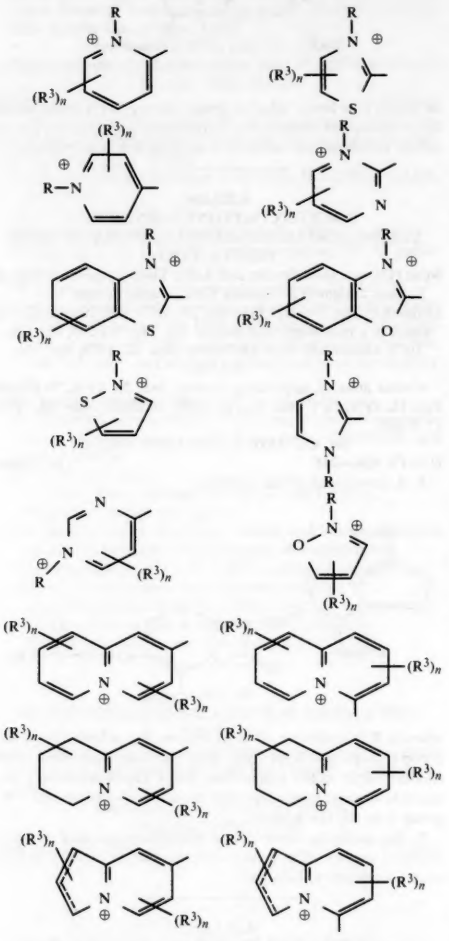
Filed Aug. 1, 1979, Ser. No. 62,836
Int. Cl.³ A61K *31/545*; C07D *501/14*
U.S. Cl. 424—246 **7 Claims**

1. A compound having the structural formula:



and the pharmaceutically acceptable salts and esters thereof

wherein: p is 1 or 2; R° is H or CH_3; R^2 is hydrogen or methoxyl; R′ is selected from the group consisting of:



wherein the dotted line indicates both saturated and unsaturated rings; and

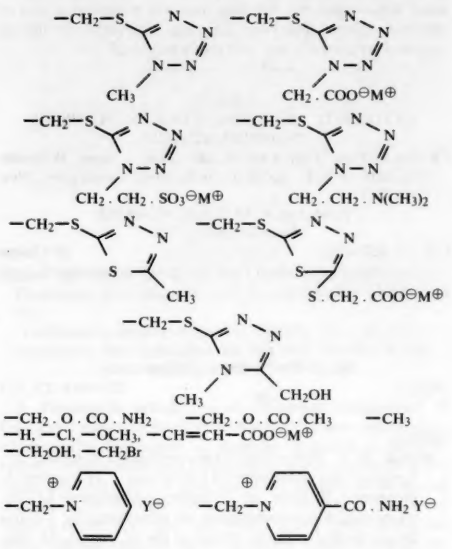
wherein:

R is hydrogen alkyl having from 1–6 carbon atoms, substituted alkyl having from 1–6 carbon atoms wherein the substituent is chloro, fluoro, hydroxyl, alkoxyl (C_{1-6}), carboxyl, amino, sulfo and mono- and dialkylamino wherein each alkyl has 1–6 carbon atoms substituted and unsubstituted phenylaklkyl and phenylalkenyl having 7–12 carbon atoms wherein the substituent is selected from chloro, fluoro, carboxyl, amino, cyano, hydroxyl and sulfo;

R^3 is chloro, fluoro, hydroxyl, carboxyl, sulfo, cyano, amino, mono- and dialkylamino, alkoxyl, alkyl having from 1–6 carbon atoms, substituted alkyl having 1–6 carbon atoms wherein the substituent is carboxyl, cyano, alkoxyl having 1–6 carbon atoms, phenyl and phenyloxy;

n is an integer selected from 0 to 3 and

A is selected from:



wherein Y is a pharmaceutically acceptable anion and M is a pharmaceutically acceptable cation.

7. An antibiotic pharmaceutical composition comprising a therapeutically effective amount of a compound according to claim **1** and a pharmaceutical carrier therefor.

4,283,398

CEPHALOSPORINS

Akira Matsubara, Yokohama; Hideaki Sakai, Fujisawa; Toshio Suganuma, Mobara; Nobuyuki Fukazawa, and Takuo Nakano, both of Yokohama, all of Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

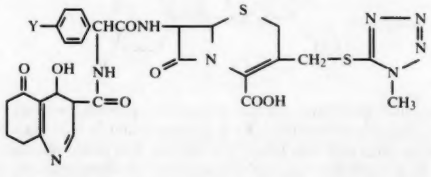
Filed Nov. 26, 1979, Ser. No. 97,146

Claims priority, application Japan, Nov. 28, 1978, 53-146053

Int. Cl.[3] **C07D** *501/36*

U.S. Cl. 424—246 **8 Claims**

1. A cephalosporanic acid of the formula



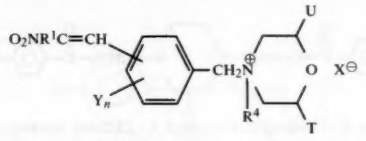
wherein Y represents a hydrogen atom or a hydroxyl group, and pharmaceutically acceptable salts and esters thereof.

4,283,399
PARASTICIDE

Stanislaw Witek, Swobodna Str., 12; Damian Grobelny, Cieszkowskiego Str., 15, both of Wroclaw; Janina Ptaszkowska, Ks. Janusza Str., 62, Warszawa; Andrzej Bielecki, R. Luksemburg Str., 25, Opole; Edmund Bakuniak, Dzielna Str., 11a, Warszawa; Stefan Fulde, Traugutta Str., 7/9, Warszawa, and Jadwiga Gorska-Poczopko, Instytucka Str., 4, Jablonna/k Warszawy, all of Poland

Division of Ser. No. 884,842, Mar. 9, 1978, Pat. No. 4,217,365. This application May 25, 1979, Ser. No. 42,407
Claims priority, application Poland, Mar. 11, 1977, 196612
Int. Cl.[3] A01N *43/84*
U.S. Cl. 424—248.4 1 Claim

1. A fungicidal composition containing as the active substance therein a fungicidally effective amount of a compound having the formula:



wherein

X is a halogen atom,

Y is a hydroxy or nitro group,

n is 0–4

R^1 is an alkyl radical with 1–3 carbon atoms or a hydrogen atom,

R^4 is an alkyl radical with 7–16 carbon atoms, and

U and T are methyl radicals or hydrogen atoms, and a carrier selected from the group consisting of kaolin, synthetic and natural kieselguhr, bentonite, talc, grain flour, woodbark and walnut shell flour.

4,283,400
MEDICATED ANIMAL FEED BASED ON LIVER MEAL

Miklos von Bittera; Herbert Voege, both of Leverkusen, and Reinwalt Bauditz, Wuppertal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Sep. 10, 1979, Ser. No. 73,990
Claims priority, application Fed. Rep. of Germany, Sep. 25, 1978, 2841668
Int. Cl.[3] A61K *31/43, 31/65, 31/325, 31/495*
U.S. Cl. 424—250 6 Claims

1. A medicated animal feed comprising 0.1 to 20 parts by weight of one or more pharmaceutically active compounds selected from the group consisting of anthelmintic agents, praziquantel, tetramisole, febantel, levamisole, niclosamide, piperazine salts, chloramphenicol, tetracycline, penicillin derivatives, ampicillin, cloxacillin, and 6-chloro-6-dehydro-17α-acetoxy-progesterone, 1 to 20 parts by weight of a binder selected from the group consisting of starch, polyvinylpyrrolidone, gelatin, sodium alginate and a cellulose derivative, 50 to 99 parts by weight liver meal as a formulation auxiliary and 0.04 to 5 parts by weight of one or more other auxiliaries.

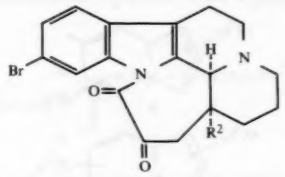
4. A medicated animal feed according to claim 1, characterized in that the liver meal is de-fatted liver meal and that the active compound is Praziquantel.

4,283,401
PROCESS FOR THE PREPARATION OF 11-BROMO-VINCAMINIC ACID ESTER DERIVATIVES AND THEIR USE IN PROTECTING ANIMALS AGAINST CEREBRAL HYPOXY

Csaba Szantay; Lajos Szabo; György Kalaus; Lajos Dancsi; Tibor Keve; Egon Karpati, and Laszlo Szporny, all of Budapest, Hungary, assignors to Richter Gedeon Vegyeszeti Gyar RT, Budapest, Hungary

Filed Jul. 11, 1979, Ser. No. 56,647
Claims priority, application Hungary, Jul. 12, 1978, RI 676; Jul. 12, 1978, RI 677; Jul. 12, 1978, RI 678
Int. Cl.[3] A61K *31/55;* C07D *459/00, 461/00*
U.S. Cl. 424—256 30 Claims

1. An optically active or racemic 11-bromo-14,15-dioxo-E-homo-eburnane derivative of the formula (VII),



wherein R^2 is a C_{1-6} alkyl group, or a pharmaceutically acceptable acid addition salt thereof.

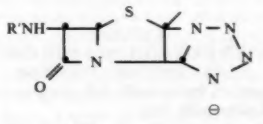
25. A method of protecting an animal against cerebral hypoxy which comprises the step of administering to the animal subject a pharmaceutically effective amount of the compound defined in claim 1 or a pharmaceutically acceptable salt thereof.

4,283,402
6-N-HETEROCYCLYL-3-TETRAZOLYL-PENICILLINS

John Hannah, Matawan, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

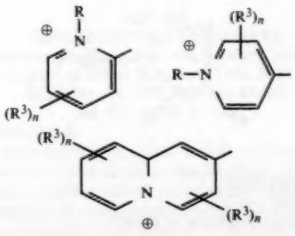
Filed Aug. 1, 1979, Ser. No. 62,828
Int. Cl.[3] C07D *402/02*
U.S. Cl. 424—256 4 Claims

1. A compound having the structural formula:

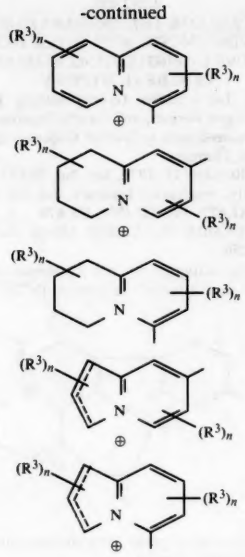


and the pharmaceutically acceptable salts and esters thereof wherein:

R′ is selected from the group consisting of:



-continued



wherein the dotted line indicates both saturated and unsaturated rings; and

wherein:

R is hydrogen, alkyl having from 1–6 carbon atoms, substituted alkyl having from 1–6 carbon atoms wherein the substituent is chloro, fluoro, hydroxyl, alkoxyl (C_{1-6}), carboxyl, amino, sulfo and mono- and dialkylamino wherein each alkyl has 1–6 carbon atoms substituted and unsubstituted phenylaklkyl and phenylalkenyl having 7–12 carbon atoms wherein the substituent is selected from chloro, fluoro, carboxyl, amino, cyano, hydroxyl and sulfo;

R^3 is chloro, fluoro, hydroxyl, carboxyl, sulfo, cyano, amino, mono- and dialkylamino, alkoxyl alkyl having from 1–6 carbon atoms, substituted alkyl having 1–6 carbon atoms wherein the substituent is carboxyl, cyano, alkoxyl having 1–6 carbon atoms, phenyl and phenyloxy;

n is an integer selected from 0 to 3.

4,283,403

SUBSTITUTED ISOXAZOLINES FOR CONTROL OF PLANT PHYTOPATHOGENS

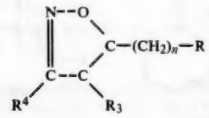
James D. Davenport, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Continuation-in-part of Ser. No. 695,668, Jun. 14, 1976, abandoned. This application Aug. 31, 1977, Ser. No. 829,304

Int. Cl.[3] **C07D** *413/04;* **A01N** *43/80*

U.S. Cl. 424—263 **9 Claims**

1. A compound of the formula



wherein

R represents NCS;

n represents 1 or 2;

R^3 represents hydrogen or phenyl;

R^4 represents 2-pyridyl.

7. The method of reducing the adverse effects of fungal foliar phytopathogens which comprises contacting the phytopathogens on the foliage of host plants with an effective phytopathogen-inhibiting amount of a compound of claim **1**.

4,283,404

AROYLETHENYLPIPERIDINOBUTYROPHENONE ANTIPSYCHOTIC AGENTS

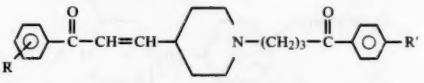
Albert A. Carr, and Robert A. Farr, both of Cincinnati, Ohio, assignors to Richardson-Merrell Inc., Wilton, Conn.

Filed Sep. 4, 1979, Ser. No. 72,499

Int. Cl.[3] **C07D** *211/18;* **A61K** *31/445*

U.S. Cl. 424—267 **12 Claims**

1. A compound of the formula



wherein R is hydrogen, C_{1-4} alkyl, C_{1-4} alkoxy, fluorine, chlorine, bromine, or trifluoromethyl; and R′ is hydrogen, fluorine, chlorine or bromine; and pharmaceutically acceptable acid addition salts thereof.

4,283,405

DITHIENYLPIPERIDINES, PHARMACEUTICAL COMPOSITIONS THEREOF, AND METHOD OF USE THEREOF

Jurgen Engel, Alzenau; Axel Kleemann, Hanau; Fritz Stroman, Offenbach, and Klaus Thiemer, Hanau, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

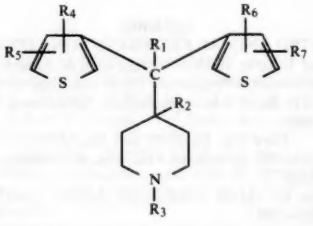
Filed Jan. 14, 1980, Ser. No. 112,099

Claims priority, application United Kingdom, Jan. 17, 1979, 7901659

Int. Cl.[3] **A61K** *311/38;* **C07D** *409/14;* **A61K** *31/445*

U.S. Cl. 424—267 **30 Claims**

1. A compound having the formula



where R_1 is hydrogen or hydroxy, R_2 is hydrogen or R_1 and R_2 together represent a second bond between the carbon atoms carrying R_1 and R_2, R_3 is a C_3–C_8 cycloalkyl group or a C_1–C_{20} alkyl group containing one or two hydroxy groups and the groups R_4, R_5, R_6 and R_7 are hydrogen, C_1–C_6-alkyl groups or halogen atoms, an N-oxide thereof, a quaternary salt thereof with a compound of the formula R_8Y where R_8 is alkyl of 1 to 20 carbon atoms and Y is chlorine, bromine or iodine or an acid addition salt thereof with a therapeutically acceptable acid.

16. A method of preventing anginosis in a mammal comprising administering to the mammal an effective amount of a compound of claim **1** to prevent anginosis.

4,283,406

COMBATING BOTRYTIS FUNGI WITH 1-(2,4-DICHLOROPHENYL)-1-(2,6-DIHALOGENOBENZYLOXIMINO)-2-(1,2,4-TRIAZOL-1-YL)-ETHANES

Wolfgang Krämer; Hans-Joachim Knops; Karl H. Büchel, all of Wuppertal, and Wilhelm Brandes, Leichlingen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

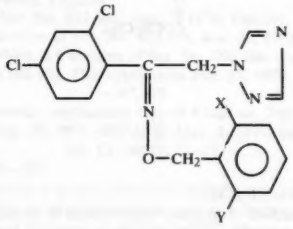
Filed Apr. 21, 1980, Ser. No. 141,834

Claims priority, application Fed. Rep. of Germany, May 8, 1979, 2918467

Int. Cl.³ A01N *43/64;* **C07D** *249/08*

U.S. Cl. 424—269 **7 Claims**

1. A method of combating Botrytis fungi, comprising applying to such fungi, or to a habitat thereof to be protected against such fungus, a fungicidally effective amount of a 1-(2,4-dichlorophenyl)-1-(2,6-dihalogenobenzyloximino)-2-(1,2,4-triazol-1-yl)-ethane of the formula



in which

X and Y each independently is chlorine or fluorine or a physiologically acceptable acid addition salt thereof.

4,283,407

THIOPROPIONAMIDES, AND THE PHARMACEUTICAL COMPOSITIONS

Charles Malen, Fresnes; Pierre Roger, St. Cloud, and Michel Laubie, Vaucresson, all of France, assignors to Science Union et Cie, Suresnes, France

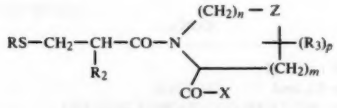
Filed Sep. 25, 1978, Ser. No. 945,253

Claims priority, application France, Sep. 28, 1977, 77 29109; United Kingdom, Jan. 6, 1978, 0051/78

Int. Cl.³ C07D *277/06;* **A61K** *31/425*

U.S. Cl. 424—270 **8 Claims**

1. A compound of the formula



(I)

where

R is hydrogen, loweralkyl, loweralkanoyl, phenylloweralkyl or phenyl, where each of such phenyl rings may be substituted with one to three substituents selected from the group consisting of halogen, trifluoromethyl, lower alkyloxy, vinyl, lower alkylenedioxy, hydroxy and lower alkyl;

R_2 is hydrogen, loweralkyl or lower cycloalkyl;

Z is sulfur, sulfoxide or sulfonyl;

R_3 is hydrogen or loweralkyl;

m is 1;

n is 1;

p is 0, 1, or 2; and

X is an amino group.

7. A method for treating hypertension in hypertensive patients suffering from an excessive blood content of Angiotensin II which consists in administering to said patients a small but effective amount of a compound of claim 1 or a salt thereof to curb the conversion of Angiotensin I into Angiotensin II.

4,283,408

GUANIDINOTHIAZOLE COMPOUNDS, PROCESS FOR PREPARATION AND GASTRIC INHIBITING COMPOSITIONS CONTAINING THEM

Yasufumi Hirata, Omiya; Isao Yanagisawa, Tokyo; Yoshio Ishii, Omiya; Shinichi Tsukamoto, Tokyo; Noriki Ito, Twatsuki; Yasuo Isomura, Yokohama, and Masaaki Takeda, Urawa, all of Japan, assignors to Yamanouchi Pharmaceutical Co., Ltd., Tokyo, Japan

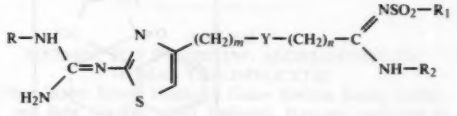
Filed Dec. 27, 1979, Ser. No. 107,629

Claims priority, application Japan, Aug. 2, 1979, 54-98906

Int. Cl.³ C07D *277/38;* **A61K** *31/425*

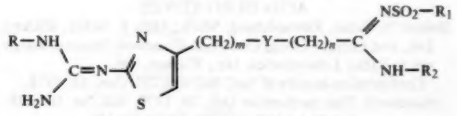
U.S. Cl. 424—270 **6 Claims**

1. Guanidinothiazole compounds of the formula



wherein R represents a hydrogen atom or a lower alkyl group, R_1 represents an amino group, a lower alkyl group, a halogeno lower alkyl group, a phenyl or naphthyl group which is unsubstituted or substituted by halogen, hydroxyl, amino, or alkoxy, a mono- or di-lower alkylamino group, an arylamino group or an aralkylamino group, R_2 represents a hydrogen atom, a lower alkyl group, a lower alkenyl group or a lower alkynyl group, Y represents a sulfur atom or a methylene group, m and n, each represents an integer of 1–3, and the pharmacologically acceptable acid addition salts thereof.

6. Medical composition containing a gastric acid secretion inhibiting amount of a guanidinothiazole compound of the formula



wherein R represents a hydrogen atom or a lower alkyl group, R_1 represents an amino group, a lower alkyl group, a halogeno lower alkyl group, a phenyl or naphthyl group which is unsubstituted or substituted by halogen, hydroxyl, amino, or akoxy, a mono- or di-lower alkylamino group, an arylamino group or an aralkylamino group, R_2 represents a hydrogen atom, a lower alkyl group, a lower alkenyl group or a lower alkynyl group, Y represents a sulfur atom or a methylene group, m and n, each represent an integer of 1–3, or a non-toxic acid addition salt thereof and pharmaceutically acceptable carriers or diluents.

4,283,409

IMIDAZOLONE DERIVATIVES

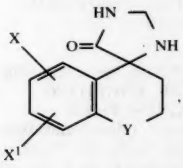
John L. Belletire, Madison, Wis., and Reinhard Sarges, Mystic, Conn., assignors to Pfizer Inc., New York, N.Y.

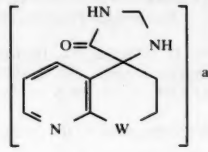
Filed Oct. 29, 1979, Ser. No. 89,655

Int. Cl.³ A61K *31/415*

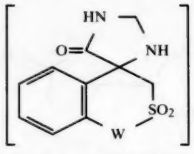
U.S. Cl. 424—273 R **4 Claims**

1. A method for treating a diabetic host to prevent or alleviate diabetes-associated chronic complications arising in said host, which comprises administering to said diabetic host an effective amount of a compound selected from the group consisting of spiro-imidazolone bases of the formula:


[I]


II

and


III

and the pharmaceutically acceptable acid addition salts thereof, wherein

X is hydrogen and X^1 is hydrogen, fluorine, chlorine, bromine, lower alkyl or lower alkoxy; or

X and X^1, when taken separately, are each chlorine, lower alkyl or lower alkoxy, and when taken together at adjacent positions of the molecule are $—OCH_2(CH_2)_nO—$;

Y is $—(CH_2)_n—$; and

n is zero or one.

4,283,410

3-AMINO OR AMIDO-2-(1H-INDOL-3-YL) PROPANOIC ACID DERIVATIVES

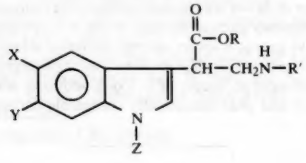
Robert N. Schut, Edwardsburg, Mich.; Max E. Safdy, Elkhart, Ind., and Enrique Hong, Cerro San Francisco, Mexico, assignors to Miles Laboratories, Inc., Elkhart, Ind.

Continuation-in-part of Ser. No. 915,735, Jun. 15, 1978, abandoned. This application Dec. 26, 1979, Ser. No. 107,076

Int. Cl.[3] **A61K** *31/405;* **E07D** *209/20*

U.S. Cl. 424—274 **23 Claims**

1. 3-Amino or amido-2-(1H-indol-3-yl)propanoic acid compounds characterized by the formula:



wherein:

R is H, CH_3 or CH_2CH_3,

R′ is H or

X is H, F or OCH_3,

Y is H or Cl, and

Z is H or

provided that:

(i) when X is F; Y, Z and R′ are H and R is H or CH_3;

(ii) when X is H, Y is Cl, Z is H, R is CH_3 and R′ is H; and

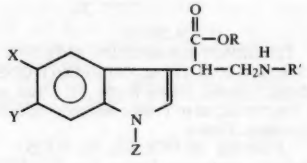
(iii) when X is OCH_3; Y is H provided further that when Z and R′ are H, R is CH_3; when Z is H and R′ is

R is H and when Z is

R′ is

and R is CH_2CH_3.

13. A method of treating hypertension in an individual requiring such treatment which method comprises administering to such individual an anti-hypertensive amount of a compound of the formula:



wherein:

R is H, CH_3 or CH_2CH_3,

R′ is H or

X is H, F or OCH_3,

Y is H or Cl, and

Z is H or

provided that:

(i) when X is F; Y, Z and R′ are H and R is H or CH_3;

(ii) when X is H, Y is Cl, Z is H, R is CH_3 and R′ is H; and

(iii) when X is OCH_3; Y is H provided further that when Z and R′ are H, R is CH_3, when Z is H and R′ is

R is H and when Z is

R' is

and R is CH_2CH_3.

4,283,411

ANTIBACTERIAL COMPOUNDS

Kong Luk, Cranleigh; John P. Clayton, Horsham, and Norman H. Rogers, Rudgwick, all of England, assignors to Beecham Group Limited, England

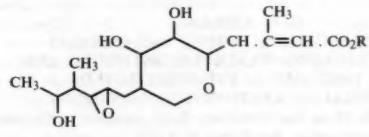
Division of Ser. No. 931,385, Aug. 7, 1978, Pat. No. 4,237,161, which is a division of Ser. No. 873,394, Jan. 30, 1978, Pat. No. 4,166,863, which is a division of Ser. No. 803,466, Jun. 6, 1977, Pat. No. 4,102,901. This application Jun. 11, 1979, Ser. No. 47,352

Claims priority, application United Kingdom, Jun. 15, 1976, 24712/76; Sep. 29, 1976, 40472/76; Mar. 1, 1977, 8647/77

Int. Cl.³ A61K *31/35*

U.S. Cl. 424—283 **18 Claims**

10. A method of treating bacterial infections in humans and animals which comprises administering to a human or animal in need of said treatment an antibacterially effective amount of a compound of the formula (II):



(II)

wherein R is cycloalkyl of 3 to 7 carbon atoms unsubstituted or substituted by alkyl of 1 to 6 carbon atoms; or aryl unsubstituted or substituted by up to 5 substituents selected from the group consisting of halogen, alkyl of 1 to 6 carbon atoms, alkoxy of 1 to 6 carbon atoms, haloalkyl of 1 to 6 carbon atoms, hydroxy, amino, carboxy, alkoxycarbonyl of 1 to 6 carbon atoms in the alkoxy moiety and alkoxycarbonylalkyl of 1 to 6 carbon atoms, in the alkoxy moiety and 1 to 6 carbon atoms in the alkyl moiety.

4,283,412

ANTIBACTERIAL COMPOUNDS

Kong Luk, Cranleigh; John P. Clayton, Horsham, and Norman H. Rogers, Rudgwick, all of England, assignors to Beecham Group Limited, England

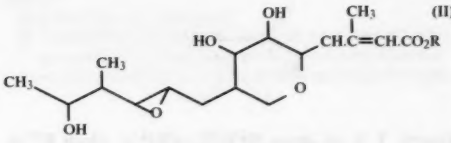
Division of Ser. No. 931,385, Aug. 7, 1978, Pat. No. 4,237,161, which is a division of Ser. No. 873,394, Jan. 30, 1978, Pat. No. 4,166,863, which is a division of Ser. No. 803,466, Jun. 6, 1977, Pat. No. 4,102,901. This application Jun. 11, 1979, Ser. No. 47,160

Claims priority, application United Kingdom, Jun. 15, 1976, 24712/76; Sep. 29, 1976, 40472/76; Mar. 1, 1977, 8647/77

Int. Cl.³ A61K *31/35*

U.S. Cl. 424—283 **10 Claims**

6. A method of treating bacterial infections in humans and animals which comprises administering to a human or animal in need of said treatment an antibacterially effective amount of a compound of the formula (II).



(II)

wherein R is alkyl of 1 to 20 carbon atoms, alkenyl of 2to 8 carbon atoms or alkynyl of 2 to 8 carbon atoms substituted by cycloalkyl of 3 to 7 carbon atoms unsubstituted or substituted by alkyl of 1 to 6 carbon atoms or aryl unsubstituted or substituted by up to 5 substituents selected from the group consisting of halogen, alkyl of 1 to 6 carbon atoms, alkoxy of 1 to 6 carbon atoms, hydroxy, amino, carboxy, alkoxycarbonyl of 1 to 6 carbon atoms, in the alkoxy moiety and alkoxycarbonyalkyl of 1 to 6 carbon atoms in the alkoxy moiety and 1 to 6 carbon atoms in the alkyl moiety.

4,283,413

METHOD FOR INHIBITING AGGREGATION OF HUMAN THROMBOCYTES

Tibor Szabo; Laszlo Institoris; Gabor Kovacs; Istvan Stadler, and Bela Koszegi, all of Budapest, Hungary, assignors to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara RT., Budapest, Hungary

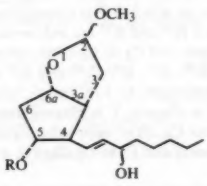
Continuation of Ser. No. 929,223, Jul. 31, 1978, abandoned. This application Dec. 12, 1979, Ser. No. 102,649

Claims priority, application Hungary, Aug. 3, 1977, Ci 1762

Int. Cl.³ A61K *31/34*

U.S. Cl. 424—285 **2 Claims**

1. A method for inhibiting an aggregation of human thrombocytes in human plasma comprising administering a therapeutically effective amount of a compound of the general formula I:



(I)

wherein R is hydrogen, alkanoyl, or aralkanoyl and represents α or β steric position or a mixture of α and β position with the provision that if R stands for p-phenyl-benzoyl then methoxy in the position 2 may stand only in α or only in β steric position, in a pharmaceutically acceptable diluent.

4,283,414

PESTICIDAL FLUORINATED ESTERS OF THE PYRETHRIN OR PYRETHROID TYPE

Donald W. G. Harney, Doncaster; Peter G. Lehman, Tullamarine, and Joseph C. Rundle, Nunawading, all of Australia, assignors to ICI Australia Limited, Melbourne, Australia

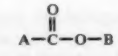
Filed Jun. 8, 1979, Ser. No. 46,757

Claims priority, application Australia, Jun. 21, 1978, PD4813

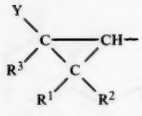
Int. Cl.³ A01N *53/00*; C07C *69/743, 69/747*

U.S. Cl. 424—304 **12 Claims**

1. An ester of the formula

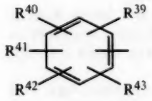


wherein: A is the group

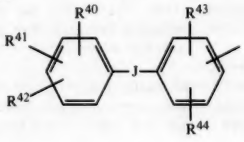


wherein: Y is the group $R^{15}R^{16}C{=}CR^{14}$ in which R^{14} is chosen from hydrogen and C_1 to C_6 alkyl, R^{15} is chosen from hydrogen, halogen and C_1 to C_6 alkyl optionally substituted with halogen and R^{16} is chosen from hydrogen, halogen, C_1 to C_6 alkyl optionally substituted with halogen and C_1 to C_6-(alkoxy)carbonyl, R^1 and R^2 are independently chosen from C_1 to C_6 alkyl and R^3 is hydrogen; and B is the group

wherein: Q is chosen from



and



in which

R^{39} is chosen from halogen and the group $R^{50}R^{51}C{=}C(R^{49})O-$ in which R^{49} is chosen from hydrogen and C_1 to C_6 alkyl and R^{50} and R^{51} are independently chosen from hydrogen, halogen and C_1 to C_6 alkyl optionally substituted with halogen, R^{40}, R^{41}, R^{42}, R^{43} and R^{44} are independently chosen from hydrogen, C_1 to C_6 alkyl, halogen and C_2 to C_6 alkenyl and J is oxygen; T is chosen from hydrogen, halogen, cyano, C_1 to C_6 alkyl optionally substituted with halogen, C_2 to C_6 alkenyl and C_2 to C_6 alkynyl; and X is fluorine.

6. An insecticidal or acaricidal composition comprising as active ingredient an insecticidally or acaricidally effective amount of a compound according to claim **1** and an inert carrier therefor.

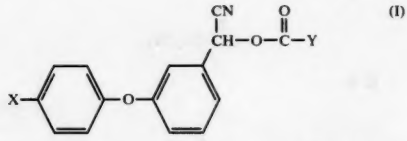
4,283,415

OIL-IN-WATER INSECTICIDAL AND ACARICIDAL EMULSION

Hiroshi Fuyama, Ikeda, and Kozo Tsuji, Takatsuki, both of Japan, assignors to Sumitomo Chemical Company Limited, Osaka, Japan

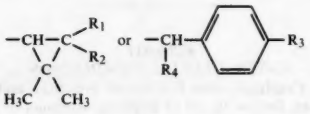
Filed Jun. 20, 1979, Ser. No. 50,286
Claims priority, application Japan, Jul. 7, 1978, 53-83200
Int. Cl.[3] **A01N** *37/34*
U.S. Cl. 424—304 **12 Claims**

1. An oil-in-water insecticidal and acaricidal emulsion comprising as a hydrophobic insecticidally and acaricidally active liquid ingredient 1 to 50% by weight of at least one ester of the formula (I):

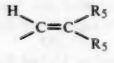


(I)

where X is a hydrogen atom, a chlorine atom, a bromine atom or a fluorine atom; and Y is a group of the formula:



where R_1 is a methyl group or a group of the formula:



where R_5 is a chlorine atom, a bromine atom, a fluorine atom or a methyl group; R_2 is a hydrogen atom or a methyl group; R_3 is a chlorine atom, a bromine atom, a fluorine atom or a tert-butyl group; and R_4 is an isopropyl group or a cyclopropyl group, 2 to 10% by weight of polyvinyl alcohol or gum arabic and 0.1 to 20% by weight of a thickener with the balance being water.

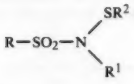
4,283,416

FUNGICIDAL, MITICIDAL AND OVICIDAL ALKOXYCARBONYLALKYL-SUBSTITUTED AND CARBAMYLALKYL-SUBSTITUTED N-HALOALKYLTHIOSULFONAMIDES

David C. K. Chan, San Francisco, Calif., assignor to Chevron Research Company, San Francisco, Calif.

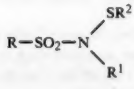
Division of Ser. No. 921,385, Jul. 3, 1978, Pat. No. 4,230,875, which is a division of Ser. No. 734,858, Oct. 22, 1976, Pat. No. 4,112,237. This application Feb. 19, 1980, Ser. No. 122,108
Int. Cl.[3] **C07C** *143/78, 37/18;* **A01N** *41/06*
U.S. Cl. 424—305 **4 Claims**

1. A compound of the formula



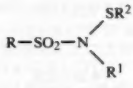
wherein R is phenyl substituted with up to 2 of the same or different substituents selected from fluoro, chloro, bromo, iodo, trifluoromethyl, trichloromethyl, tribromomethyl or alkyl of 1 to 4 carbon atoms; R^1 is carbamylalkyl of 1 to 6 carbon atoms; N-alkylcarbamylalkyl of 2 to 6 carbon atoms; or N,N-dialkylcarbamylalkyl of 3 to 6 carbon atoms; and R^2 is alkyl of 1 to 2 carbon atoms and of 1 to 5 fluoro, chloro, bromo or iodo atoms.

2. A method for killing mite eggs which comprises applying thereto an ovicidally effective amount of a compound of the formula



wherein R is alkyl of 1 to 6 carbon atoms; cycloalkyl of 5 to 8 carbon atoms substituted with up to 2 alkyl of 1 to 4 carbon atoms; phenyl substituted with up to 2 of the same or different substituents selected from fluoro, chloro, bromo, iodo, trifluoromethyl, trichloromethyl, tribromomethyl or alkyl of 1 to 4 carbon atoms; alkoxycarbonylalkyl of 2 to 6 carbon atoms; carbamylalkyl of 1 to 6 carbon atoms; N-alkylcarbamylalkyl of 2 to 6 carbon atoms; or N,N-dialkylcarbamylalkyl of 3 to 6 carbon atoms; R^1 is alkyl of 1 to 6 carbon atoms; cycloalkyl of 5 to 8 carbon atoms substituted with up to 2 alkyl of 1 to 4 carbon atoms; phenyl substituted with up to 2 of the same or different substituents selected from fluoro, chloro, bromo, iodo, trifluoromethyl, trichloromethyl, tribromomethyl or alkyl of 1 to 4 carbon atoms; alkoxycarbonyl of 2 to 6 carbon atoms; carbamylalkyl of 1 to 6 carbon atoms, N-alkylcarbamylalkyl of 2 to 6 carbon atoms; N,N-dialkylcarbamylalkyl of 3 to 6 carbon atoms; and R^2 is tetrachloroethyl, with the proviso that one R or R^1 group is alkoxycarbonylalkyl, carbamylalkyl, N-alkylcarbamylalkyl or N,N-dialkylcarbamylalkyl.

3. A method for the control of fungi which comprises applying thereto a fungicidally effective amount of a compound of the formula



wherein R is alkyl of 1 to 6 carbon atoms; cycloalkyl of 5 to 8 carbon atoms substituted with up to 2 alkyl of 1 to 4 carbon atoms; phenyl substituted with up to 2 of the same or different substituents selected from fluoro, chloro, bromo, iodo, trifluoromethyl, trichloromethyl, tribromomethyl or alkyl of 1 to 4 carbon atoms; alkoxycarbonylalkyl of 2 to 6 carbon atoms; carbamylalkyl of 1 to 6 carbon atoms; N-alkylcarbamylalkyl of 2 to 6 carbon atoms; or N,N-dialkylcarbamylalkyl of 3 to 6 carbon atoms; R^1 is alkyl of 1 to 6 carbon atoms; cycloalkyl of 5 to 8 carbon atoms substituted with up to 2 alkyl of 1 to 4 carbon atoms; phenyl substituted with up to 2 of the same or different substituents selected from fluoro, chloro, bromo, iodo, trifluoromethyl, trichloromethyl, tribromomethyl, or alkyl of 1 to 4 carbon atoms; alkoxycarbonylalkyl of 2 to 6 carbon atoms; carbamylalkyl of 1 to 6 carbon atoms; N-alkylcarbamylalkyl of 2 to 6 carbon atoms; or N,N-dialkylcarbamylalkyl of 3 to 6 carbon atoms; and R^2 is alkyl of 1 to 2 carbon atoms and of 1 to 5 fluoro, chloro, bromo or iodo atoms, with the proviso that one R or R^1 group is alkoxycarbonylalkyl, carbamylalkyl of 1 to 6 carbon atoms, N-alkylcarbamylalkyl of 2 to 6 carbon atoms or N,N-dialkylcarbamylalkyl of 3 to 6 carbon atoms.

4,283,417

BRONCHODILATION WITH 13,14-DIHYDRO-15-AKLENYL PROSTAGLANDINS

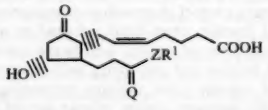
James F. Eggler, Stonington, and Hans-Jürgen E. Hess, Old Lyme, both of Conn., assignors to Pfizer Inc., New York, N.Y.

Division of Ser. No. 695,420, Jun. 14, 1976, abandoned. This application Oct. 18, 1979, Ser. No. 85,906

Int. Cl.³ A61K *31/215, 31/19*

U.S. Cl. 424—305 **5 Claims**

1. A method of selectively inducing bronchodilation in a mammal in need of such therapy which comprises administering to said mammal a brochodilating amount of a compound of the formula

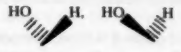


wherein

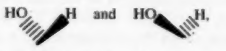
R is hydrogen or biphenylyl;

R^1 is a member selected from the group consisting of hydrogen and alkyl having from one to eleven carbon atoms;

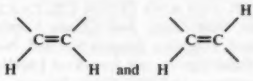
Q is a member selected from the group consisting of oxygen,



and mixtures of



and Z is a member selected from the group consisting of



4,283,418

GUANIDINOBENZOIC ACID DERIVATIVES AND PROCESS FOR THEIR PREPARATION

Setsuro Fujii, Toyonaka; Tsuyoshi Watanabe, Kadoma; Masashi Shiota, Nishinomiya; Itsuo Okumoto, Ashiya, and Naohiro Kayama, Takatsuki, all of Japan, assignors to Ono Pharmaceutical Co., Ltd., Osaka, Japan

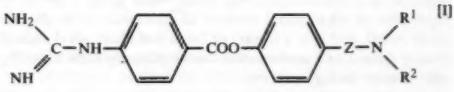
Filed Feb. 22, 1980, Ser. No. 123,609

Claims priority, application Japan, Mar. 1, 1979, 54-22571; Mar. 1, 1979, 54-22572

Int. Cl.³ A61K *31/245;* **C07C** *101/56*

U.S. Cl. 424—310 **10 Claims**

1. Guanidinobenzoic acid derivatives represented by the formula [I]



wherein Z represents a SO_2 group or Z'—CO group wherein Z' represents a single bond or a methylene, ethylene or vinylene group, and R^1 and R^2, which may be the same or different, each represent a hydrogen atom or a lower alkyl group, and the acid addition salts thereof.

4,283,419

PREPARATION FOR RAISING THE FERTILITY OF ANIMALS

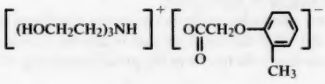
Mikhail G. Voronkov, ulitsa Lermontova, 315, kv. 32; Ada T. Platonova, ulitsa Lermontova, 313, kv. 31; Nikolai L. Simbirtsev, ulitsa Chaikovskogo, 20, kv. 2; Valery M. Dyakov, ulitsa Lermontova, 263, kv. 23, all of Irkutsk; Andrei P. Dyban, prospekt Engelsa, 28, kv. 130, Leningrad, and Igor G. Kuznetsov, ulitsa Lermontova, 273, kv. 86, Irkutsk, all of U.S.S.R.

Filed Nov. 1, 1978, Ser. No. 956,733

Int. Cl.³ A61K *31/205*

U.S. Cl. 424—316 **2 Claims**

1. A method for raising fertility in a farm animal comprising administering to the animal a preparation, the active principle of which is tris-(2-ethoxy)-ammonium-orthocresoxyacetate having the formula:



wherein the amount administered is between 2 and 50 mg/kg per dose.

2. The method of claim 1 wherein the amount administered is from 2 to 6 mg/kg per day.

4,283,420

PHARMACEUTICALLY ACTIVE CYCLOHEXYL COMPOUNDS AND THEIR PREPARATION

Charles Pigerol, Saint-Ouen; Jean-Claude Vernieres, Domene; Pierre Eymard, Fontaine; Jacques Simiand, Noyarey; Madeleine Broll, Saint-Egreve, and Jean-Yves Lacolle, Domene, all of France, assignors to Labaz, Paris, France

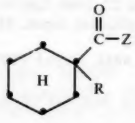
Filed Apr. 18, 1979, Ser. No. 31,165

Claims priority, application United Kingdom, Apr. 27, 1978, 16762/78

Int. Cl.[3] **A61K** *31/19;* **C07C** *62/20, 62/10, 61/08*

U.S. Cl. 424—317 **3 Claims**

1. A method of inducing anticonvulsant, antianoxic or antipsychotic effects in a human needing such treatment, comprising administering to said subject a dosage ranging from 200 to 3000 milligrams per day of a cyclohexane derivative of the general formula:



wherein Z is a hydroxyl group or an —OM group wherein M represents an alkali metal atom or an equivalent of an alkaline earth metal, and R is a linear- or branched-chain alkyl radical having from 1 to 9 carbon atoms and optionally substituted by one or more halogen atoms.

4,283,421

ANTI-VIRAL TREATMENT

Frank F. Ray, 11449 S. Iroquois Dr., Phoenix, Ariz. 85044

Filed Dec. 19, 1979, Ser. No. 105,129

Int. Cl.[3] **A61K** *31/19, 31/14*

U.S. Cl. 424—317 **3 Claims**

1. The method for treating viral infections in a human or animal host in need of said treatment which comprises contacting said host with an effective amount of a composition of matter comprising a mixture of a solution of 100 parts by weight of p-aminobenzoic acid in an amount of high proof volatile lower alcohol sufficient to dissolve and form a clear solution of said p-aminobenzoic acid and of a solution of from about 2.5 to about 15 parts by weight of a mixture of C-12 to C-18 n-alkyl dimethyl benzyl ammonium chlorides or bromides and C-12 to C-18 n-alkyl dimethyl ethylbenzyl ammonium chlorides or bromides in the range of relative proportions of 65:35::35:65 in an amount of water sufficient to dissolve said n-alkyl dimethyl ammonium chlorides or bromides and said n-alkyl dimethyl ethylbenzyl ammonium chlorides or bromides to form a clear solution.

4,283,422

3-AMINO-4-HOMOISOTWISTANE DERIVATIVES

Toshio Atsumi, Kawanishi; Yoshiaki Takebayashi, Toyonaka, and Hideki Okajima, Nishinomiya, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka and Kao Soap Company, Limited, Tokyo, both of, Japan

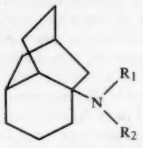
Filed Feb. 12, 1980, Ser. No. 120,834

Claims priority, application Japan, Feb. 17, 1979, 54-17406

Int. Cl.[3] **C07C** *87/40*

U.S. Cl. 424—325 **9 Claims**

1. A compound of the formula,



wherein R_1 is a hydrogen atom, a C_1–C_4 alkyl group or a C_3–C_5 alkenyl group, and R_2 is a C_1–C_4 alkyl group or a C_3–C_5 alkenyl group, or a non-toxic, pharmaceutically acceptable salt thereof.

4,283,423

FREE-FLOWING GRANULAR UREA NUTRIENT SUPPLEMENTS

Kenneth R. Watkins, Wheaton, and Michael L. Bolind, Des Plaines, both of Ill., assignors to United States Gypsum Company, Chicago, Ill.

Filed Aug. 20, 1979, Ser. No. 67,976

Int. Cl.[3] **A23K** *1/00, 1/22*

U.S. Cl. 426—69 **5 Claims**

1. A method of making a nutrient composition containing urea in granular, substantially free-flowing form consisting essentially of the steps of:

(a) dry blending a mixture of particles passing 100 U.S. Standard mesh comprising at least about 10% by weight of urea with at least about 10% by weight of a calcium sulphate selected from the group consisting of calcium sulphate hemihydrate and calcium sulphate anhydrite;

(b) compacting the dry blended mixture into a sheet at internal temperatures of 160°–225° F.; and

(c) crushing the sheet to desired granular size.

4,283,424

FROZEN PIZZA CRUST AND PIZZA SUITABLE FOR MICROWAVE COOKING

David P. Bone, Palatine, and Paula M. Manoski, Schaumburg, both of Ill., assignors to The Quaker Oats Company, Chicago, Ill.

Filed Aug. 6, 1979, Ser. No. 63,945

Int. Cl.[3] **A21D** *13/00*

U.S. Cl. 426—94 **5 Claims**

1. A frozen pizza product comprising, in combination, a crust portion and a filling portion received atop said crust portion, said filling portion comprising a pizza sauce material and said crust comprising first and second crust elements, said first crust element being comprised of a baked, cracker type dough material having a moisture content of about 5% or less, said second crust element being a baked bread dough type crust having a moisture content of from about 20% to 40% moisture, said second crust immediately overlying said first crust in intimate contact therewith and supporting said filling portion, said cracker crust being adapted to absorb vapor phase moisture created during microwave cooking of said second crust portion and said filling, said absorption of moisture by said cracker crust thereby preventing undesirable increase in the moisture content of said second crust and in

turn preventing said pizza as a whole from developing an unpalatable taste due to excess moisture content in the crust.

4,283,425

PROCESS FOR PREPARING LOW FAT CONTENT POTATO CHIPS AND PRODUCT THEREOF

Mary W. Yuan, Tarrytown, and Sharon R. Birney, Yorktown Heights, both of N.Y., assignors to General Foods Corporation, White Plains, N.Y.

Filed May 19, 1980, Ser. No. 151,212
Int. Cl.³ A23L *1/216*
U.S. Cl. 426—102 **6 Claims**

1. A process of preparing a potato product having a low fat content which comprises:

(a) coating raw potato slices with globular protein,

(b) applying a layer of edible oil on top of the protein coating, and then

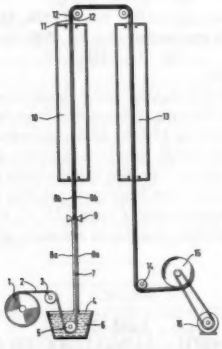
(c) microwave heating the coated potato slices for a period of time sufficient to produce a product having substantially the same flavor, color and crispness as deep fat fried potato chips and having an added fat content of up to about 10%.

4,283,426

CELLULOSE HYDRATE TUBING WITH AGING-RESISTANT BARRIER LAYER AND PROCESSES FOR THE MANUFACTURE THEREOF

Harald Schenk; Hermann Winter, and Walter Spietschka, all of Wiesbaden, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jul. 25, 1979, Ser. No. 60,366
Claims priority, application Fed. Rep. of Germany, Jul. 27, 1978, 2832926
Int. Cl.³ F16L *11/00*; B65D *81/34*; B05D *3/12*; A23G *1/00*
U.S. Cl. 426—105 **23 Claims**



1. A packaging material comprising a base layer of cellulose hydrate having on one surface a film coating which is impervious to water vapor, water and oxygen and which comprises a vinylidene chloride copolymer containing from about 90 to 92 percent by weight of vinylidene chloride, from about 5.5 to 7 percent by weight of acrylonitrile, from about 1.5 to 3.5 percent by weight of methyl methacrylate and from about 0.5 to 1.5 percent by weight of itaconic acid, said copolymer having a relative viscosity of about 1.04 measured at 23° C. in a 0.1 percent strength by weight solution in a mixture of tetrahydrofuran and toluene in the ratio of 70:30, and a relative viscosity of 2.8 measured at 23° C. in a 3 percent by weight solution in a mixture of tetrahydrofuran and toluene in the ratio of 70:30, and said film coating having a thickness corresponding to a weight per unit area in the range between about 3 and 10 g/m^2.

12. A sausage product comprising an artificial sausage casing and a meat-containing filling contained therein, wherein said sausage casing comprises said packaging material as defined by claim **1**.

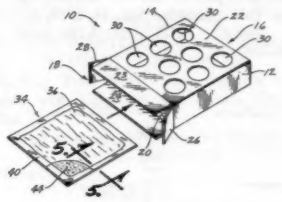
13. A process for the manufacture of packaging material, which comprises the steps of drawing a tubing of cellulose hydrate from a stock roll, applying a liquid lacquer solution to one side of the moving tubing, said solution containing a copolymer comprising from about 90 to 92 percent by weight of vinylidene chloride, from about 5.5 to 7 percent by weight of acrylonitrile, from about 1.5 to 3.5 percent by weight of methyl methacrylate and from about 0.5 to 1.5 percent by weight of itaconic acid, said copolymer having a relative viscosity of about 1.04, measured at 23° C. in a 0.1 percent strength by weight solution in a mixture of tetrahydrofuran and toluene in the ratio of 70:30, and a relative viscosity of about 2.8, measured at 23° C. in a 3 percent strength by weight solution in a mixture of tetrahydrofuran and toluene in the ratio of 70:30, levelling the lacquer to a predetermined thickness and drying it to give a film coating which comprises said copolymer having a thickness corresponding to a weight per unit area in the range between about 3 and 10 g/m^2.

4,283,427

MICROWAVE HEATING PACKAGE, METHOD AND SUSCEPTOR COMPOSITION

William C. Winters, Bloomington; Hsien-Hsin Chang, Minneapolis; George R. Anderson, Minneapolis; Ross A. Easter, Minneapolis, and Jeffrey J. Sholl, New Brighton, all of Minn., assignors to The Pillsbury Company, Minneapolis, Minn.

Filed Dec. 19, 1978, Ser. No. 970,898
Int. Cl.³ H05B *6/64*
U.S. Cl. 426—107 **40 Claims**



1. A lossy susceptor device for microwave energy, which upon continued heating by exposure to microwave radiation has a chemical susceptor portion which becomes substantially microwave transparent, said susceptor device comprising: a chemical susceptor comprising a combination of a solute and a polar solvent for said solute, the amount of solute present being as a minimum an amount which will depress the vapor pressure of said solvent, at least by 25% when compared to said solvent's boiling point at standard pressure; and a holder for said chemical susceptor said holder including vent means which permits escape of solvent from the holder when said chemical susceptor is exposed to microwave radiation.

4,283,428

BEVERAGE CONTAINERS COATED WITH A WATER-BASED LINER

William J. Birkmeyer, Oakmont, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Mar. 8, 1977, Ser. No. 775,489
Int. Cl.³ B65D *85/72*
U.S. Cl. 426—131 **10 Claims**

1. A metal container having an internal surface coated with a cured layer of a water-based coating composition comprising an aqueous medium having dissolved or dispersed therein:

(a) an at least partially base neutralized reaction product of:

(1) a polyepoxide having a 1,2-epoxy equivalency of greater than 1.0, and

(2) an aromatic amino acid containing at least one amine

group and at least one carboxyl group, in which the amine group and the carboxyl group are both attached to the aromatic ring, wherein the amine groups of said amino acid are preferentially reactive with the epoxy groups of said polyepoxide;

said reaction product having unreacted carboxyl groups which are neutralized with a base; and

(b) from about 3 to about 30 percent by weight based on the weight of (a) and (b) of a curing agent.

4,283,429

LIQUID SEASONING COMPOSITIONS I

Paul H. Todd, Jr., and Howard E. Haley, both of Kalamazoo, Mich., assignors to Kalsec, Inc., Kalamazoo, Mich.

Filed Feb. 28, 1980, Ser. No. 125,423

Int. Cl.³ A23L *1/221*

U.S. Cl. 426—250 **17 Claims**

1. A homogeneous liquid condimental composition, useful in flavoring or coloring foods and beverages and which is dispersible in both oil and water, consisting essentially of

(1) hydroxylated lecithin,

(2) tartaric acid esters of mono- and diglycerides, and

(3) one or more condiments selected from edible flavorings and edible colorings, the ratio by weight of (1) plus (2) to (3) being at least 1:4.

4,283,430

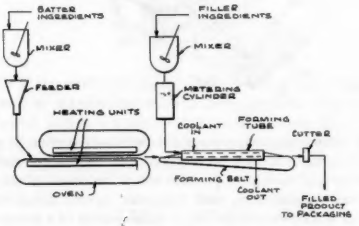
PREPARING CENTERFILLED FOOD PRODUCT

Robert C. Doster, Van Nuys; Beth R. Judson, Northridge, and Kathleen G. Soo Hoo, Granada Hills, all of Calif., assignors to Carnation Company, Los Angeles, Calif.

Continuation-in-part of Ser. No. 787,697, Apr. 14, 1977, abandoned. This application Sep. 14, 1979, Ser. No. 75,613

Int. Cl.³ A21D *13/00*; **A23G** *3/00*

U.S. Cl. 426—284 **13 Claims**



1. A continuous process for producing a tubular centerfilled food product having an edible baked thermoplastic shell surrounding a core of edible filling material, which comprises

preparing a semi-liquid batter having a relatively high content of mono-and/or disaccharides,

carrying a layer of said semi-liquid batter between a pair of opposed, vertically spaced apart, heated moving surfaces to form between said surfaces a continuous layer of batter having a controlled, set thickness,

continuously passing said batter layer through a heating zone in which the batter layer is heated to a temperature and for a time sufficient to bake the batter layer into a continuous, elongated, pliable, deformable thermoplastic sheet having a temperature of at least about 212° F. and a moisture content of no more than about 5% by weight,

continuously passing said elongated, pliable, thermoplastic baked sheet while at a temperature above about 210° F. from said heating zone through a forming tube in which the edges of said sheet are progressively raised and curved until said edges are butted together to form a continuous cylindrical tube having a closed longitudinal butted seam,

continuously filling the core of said continuous tube with an edible viscous filling material at a point after the edges of the sheet are butted together,

cooling the filled tube until the baked sheet becomes rigid, and

cutting the cooled filled tube into pieces of desired length.

4,283,431

METHOD OF MAKING A MULTI-LAYER PIZZA TYPE PRODUCT

Gene Giordano, and Flora Giordano, both of 1226 Taylor Ave., Arnold, Md. 21012

Filed Jun. 12, 1979, Ser. No. 47,687

Int. Cl.³ A21D *13/00*

U.S. Cl. 426—296 **3 Claims**

1. The method of making a double-layered pizza type product comprising the steps of applying at least one layer of ingredients, which includes tomato sauce, to a pre-baked pastry layer, distributing over said layer of ingredients a layer of cheese comprising a blend of mozzarella and provolone cheese, stretching a second layer of rolled out, unbaked pastry over the entire surface of said layer of cheese, partially baking the two pastry layers with the said at least one layer of ingredients and the layer of cheese there-between, allowing the foregoing layers to cool, applying to the upper surface of the second layer of pastry a layer of ingredients, and then baking the entire assembly until done.

4,283,432

NATURAL BEVERAGE POWDERS FROM DAHLIA EXTRACTS

William A. Mitchell, 175 Jacksonville Rd., Lincoln Park, N.J. 07035; John L. A. Mitchell, 108 Mattek, DeKalb, Ill. 60115, and Cheryl R. Mitchell, 375 Northgate Dr., Apt. #2, Manteca, Calif. 95336

Continuation-in-part of Ser. No. 973,856, Dec. 12, 1978, abandoned. This application Aug. 13, 1980, Ser. No. 177,934

Int. Cl.³ A23B *4/04*

U.S. Cl. 426—466 **10 Claims**

9. The process for making dahlia flavor powders by grinding, pressing and filtering dahlia tubers in order to extract the water soluble solids in 15% to 25% concentration by weight from the insoluble solids, then concentrating said extract to a thick syrup or solid of from 70% to 99% solids at temperatures of 50° C. to 110° C., then heating or roasting of said concentrated extract between 102° C. and 225° C. for periods of 3 minutes to 2 hours then grinding to a powder of 10 to 100 mesh U.S. Standard.

4,283,433

FLAVORING WITH α,β-UNSATURATED ALDEHYDES

Wilhelm Pickenhagen, Chavannes-des-Bois, Switzerland, assignor to Firmenich SA, Geneva, Switzerland

Filed Sep. 7, 1979, Ser. No. 73,446

Claims priority, application Switzerland, Sep. 14, 1978, 9632/78

Int. Cl.³ A23L *1/226, 1/231*

U.S. Cl. 426—534 **4 Claims**

1. A method for imparting, improving or modifying the organoleptic properties of foodstuffs, animal feeds and beverages which comprises adding thereto from about 0.01 to 2 ppm based on the weight of said foodstuff, animal feed or beverage of at least one of the α,β-unsaturated aldehydes selected from the group consisting of

2,6-dimethyl-oct-2-en-1-al,

2,5-dimethyl-oct-2-en-1-al,

2,5-dimethyl-hept-2-en-1-al and

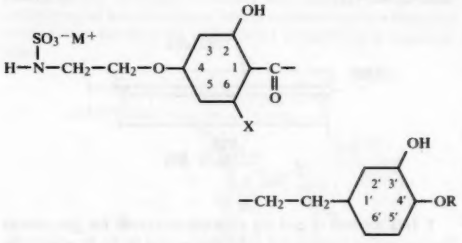
2-ethyl-7-methyl-oct-2-en-1-al.

4,283,434
SULFAMO DIHYDROCHALCONE SWEETENERS

Grant E. DuBois, 4256 Ruthelma Ave., Palo Alto, Calif. 94306, and Rebecca A. G. Stephenson, 636 Maple St., Redwood City, Calif. 94063

Filed Apr. 14, 1980, Ser. No. 140,064
Int. Cl.[3] A23L *1/236*
U.S. Cl. 426—548 13 Claims

1. A sulfamo dihydrochalcone compound represented by the structural formula



wherein R is a lower alkyl of from one to three carbon atoms inclusive, X is hydrogen or hydroxy, and M^+ is a physiologically acceptable cation.

4,283,435
OXIDIZED WHEY PROTEIN CONCENTRATE ENRICHED SHORTENING-CONTAINING BISCUITS

Robert M. Lauck, New City, N.Y., assignor to Stauffer Chemical Company, Westport, Conn.

Continuation of Ser. No. 750,946, Dec. 15, 1976, abandoned. This application Dec. 26, 1978, Ser. No. 973,506
Int. Cl.[3] A21D *2/34*
U.S. Cl. 426—551 11 Claims

1. A process for preparing protein-fortified biscuits containing at least 6.68% by weight based on the ingredient weight including shortening, but not including the water added as an ingredient of the biscuits of shortening which comprises adding to a normal biscuit recipe which requires no recipe change except for adjustment of flour or water, a protein fortifier comprising a whey protein concentrate wherein the protein is substantially oxidized in an amount sufficient to increase the protein level of the biscuit over the 7% protein content of a normal biscuit but no more than 20% above the protein content of said biscuit.

4,283,436
HARD FAT REPLACER AND CHOCOLATE CONTAINING SAME

Cornelis J. Soeters, Rotterdam; Cornelis N. Paulussen, Maasland, both of Netherlands; Frederick B. Padley, Welwyn Garden City, and David Tresser, London, both of England, assignors to Lever Brothers Company, New York, N.Y.

Continuation of Ser. No. 417,865, Nov. 21, 1973, abandoned, which is a continuation of Ser. No. 240,265, Mar. 31, 1972, abandoned. This application Dec. 16, 1976, Ser. No. 751,309
Claims priority, application United Kingdom, Apr. 2, 1977, 8501/77; Apr. 2, 1977, 8502/77; Apr. 2, 1977, 8503/77
Int. Cl.[3] A23D *5/00*; A23G *1/00*
U.S. Cl. 426—607 8 Claims

1. A hard-fat replacer consisting essentially of palm mid-fraction and an amount of

(a) at least 85% pure 1,3-distearyl-2-oleyl glycerol,

(b) at least 85% pure 1-palmityl-2-oleyl-3-stearyl glycerol, or

(c) mixtures of said at least 85% pure 1,3-distearyl-2-oleyl glycerol and said at least 85% pure 1-palmityl-2-oleyl-3-stearyl glycerol,

effective to increase the flexibility of palm mid-fraction as a hard-fat replacer.

4,283,437
METHOD FOR FRYING FOODS AND FRIED FOOD PRODUCTS

Lucy L. Fan, Irving; Alan Wohlman, Richardson, and Bobby J. Longan, Carrollton, all of Tex., assignors to Frito-Lay, Inc., Dallas, Tex.

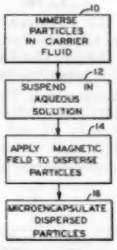
Filed Aug. 2, 1979, Ser. No. 63,090
Int. Cl.[3] A23L *1/216*
U.S. Cl. 426—637 8 Claims

1. A method for counteracting the development of light-induced, undesirable organoleptic characteristics in an oil-absorbent, farinaceous food fried in cottonseed oil which comprises frying said food in non-hydrogenated cottonseed oil in which the cyclopropenoid fatty acid content is about 0.1% or less and sufficiently low to resist the development of said characteristics.

4,283,438
METHOD FOR INDIVIDUALLY ENCAPSULATING MAGNETIC PARTICLES

Lawrence L. Lee, Fort Wayne, Ind., assignor to Magnavox Government and Industrial Electronics Company, Fort Wayne, Ind.

Filed Dec. 26, 1979, Ser. No. 106,793
Int. Cl.[3] B05D *3/14*
U.S. Cl. 427—47 18 Claims



1. A method for encapsulating a preselected average number of magnetized particles which may be rotated within individual capsules for use in a magnetic particle display comprising the steps of:

immersing the particles in a liquid internal phase;

forming drops of the internal phase containing said particles;

suspending said drops in a liquid continuous phase;

applying a varying magnetic field to said suspension for dispersing said particles and forming smaller drops with a reduced number of particles in each drop, the frequency of said field variations being selected according to the desired number of particles in individual drops;

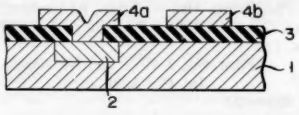
microencapsulating individual ones of said drops to form capsules containing drops in which said particles are rotatable.

4,283,439

METHOD OF MANUFACTURING A SEMICONDUCTOR DEVICE BY FORMING A TUNGSTEN SILICIDE OR MOLYBDENUM SILICIDE ELECTRODE

Iwao Higashinakagawa; Syohei Sima, both of Kawasaki, and Takahiko Moriya, Yokosuka, all of Japan, assignors to VLSI Technology Research Association, Japan

Continuation of Ser. No. 971,547, Dec. 20, 1978, abandoned.
This application Apr. 29, 1980, Ser. No. 144,836
Claims priority, application Japan, Dec. 23, 1977, 52-155179
Int. Cl.³ H01L 21/285
U.S. Cl. 427—89 6 Claims



1. A method of making a semiconductor device comprising the steps of:

forming an interconnection electrode comprising a silicide of a refractory metal selected from the group consisting of molybdenum and tungsten on an insulating film formed on a semiconductor substrate;

forming a silicon nitride film on the interconnection electrode in an atmosphere containing ammonia gas and silane gas;

forming a silicon oxide film on the silicon nitride film;

selectively etching the silicon oxide film and the silicon nitride film to form a contact hole; and

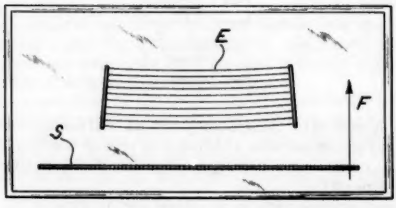
forming a metal electrode layer on the silicon oxide film and the interconnection electrode through said contact hole.

4,283,440

THERMAL SHEET PRODUCTION PROCESS

Ciro Paudice, Vasto, and Oscar De Lena, Termoli, both of Italy, assignors to Societa' Italiana Vetro-SIV-S.p.A., Italy

Filed Jan. 21, 1980, Ser. No. 113,746
Claims priority, application Italy, Feb. 6, 1979, 19925 A/79
Int. Cl.³ B05D 5/12, 1/36; C03C 17/40
U.S. Cl. 427—108 9 Claims



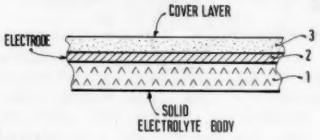
1. In a process for the production of a thermal pane of the type having an electrically conductive circuit on a glass pane, the improvement comprising the steps of producing a plurality of electrically conductive inks, each of said inks having a different resistivity, forming on at least one side of the glass pane a continuous circuit having a constant section along its length by layering each of said inks along the length of said circuit at predetermined locations so that the resistivity of said circuit changes along the length thereof.

4,283,441

METHOD OF MAKING AN ION CONDUCTIVE GAS SENSOR BODY WITH A CERMET ELECTRODE THEREON

Wolf-Dieter Haecker, Asperg, and Karl-Hermann Friese, Leonberg, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Nov. 29, 1979, Ser. No. 98,708
Claims priority, application Fed. Rep. of Germany, Dec. 6, 1978, 2852638
Int. Cl.³ B05D 5/12
U.S. Cl. 427—126.2 11 Claims



1. In a method of making a cermet electrode for gas sensors having an ion conductive solid electrolyte body, in which the electrode essentially comprises a mixture of a finely divided ceramic to form a support lattice and a finely divided electron conductive material, and including the steps of applying the mixture of ceramic-electron conductive material to said body and sintering the body and mixture thereon to form a cermet electrode on the body,

the improvement wherein

the finely divided ceramic for the lattice comprises a material having a lesser sintering activity than the sintering activity of the solid electrolyte body.

4,283,442

METHOD OF PRODUCING A DIMENSIONALLY STABLE BATTERY SEPARATOR

Sueo Machi, Takasaki; Isao Ishigaki, Maebashi; Takanobu Sugo, Gunma; Kazuo Murata; Shiro Tanso, both of Takatsuki, and Keizi Senoo, Takasaki, all of Japan, assignors to Japan Atomic Energy Research Institute, Tokyo and Yuasa Battery Co. Ltd., Osaka, both of, Japan

Filed Feb. 4, 1980, Ser. No. 118,103
Claims priority, application Japan, Feb. 5, 1979, 54/11985
Int. Cl.³ B05D 3/06
U.S. Cl. 427—171 3 Claims

1. A method of producing a dimensionally stable battery separator characterized by grafting acrylic acid and/or methacrylic acid onto a polyethylene film, treating the resulting membrane with an aqueous alkaline solution, and drying the treated membrane under application of tension.

4,283,443

METHOD AND APPARATUS FOR COATING WEBS

Edward J. Choinski, Wayland, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Jan. 27, 1977, Ser. No. 762,950
Int. Cl.³ B05D 1/26, 1/34; B05C 5/02
U.S. Cl. 427—295 15 Claims

1. The method for coating a web moving in a generally upwardly direction along a predetermined path segment with a liquid composition comprising at least two superposed separate and distinct layers which comprises:

a. feeding at least two liquid streams through vertically spaced slots onto downwardly inclined slide surfaces so that the liquid streams flow by gravity down the slide surfaces to form superposed distinct layers on the lowermost slide surface;

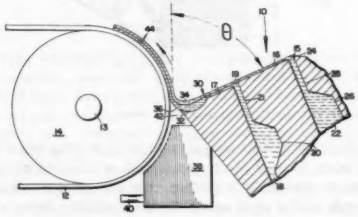
b. flowing said liquid layers into a pool on said lowermost

surface for a time sufficient to level said layers relative to the horizontal;

c. changing the direction of flow of said liquid layers at the lowermost end of said lowermost inclined surface to a generally upward direction and in generally the same direction as the movement of said web as said layers move to a location adjacent said path segment and spaced therefrom by a gap; and

d. flowing said liquid layers across said gap in a generally upward direction to contact and coat said moving web.

9. Apparatus for coating a web moving over a path segment in a generally upwardly direction with a liquid composition comprising at least two liquid layers wherein layers within said composition are separate and distinct comprising in combination:



a. means comprising vertically spaced discharge slots for flowing said liquid compositions down an inclined surface,

b. said inclined surface having a generally upwardly directed lip at its lowermost end, said lip forming a pool with upstream portions of said inclined surface of sufficient size to cause said liquid composition to level relative to the horizontal, said lip being adapted to alter the direction of flow of said liquid composition in a generally upward direction and in generally the same direction as the direction of web movement; and

c. the end of said lip being positioned away from said web to form a gap across which said liquid composition flows to coat said moving web.

4,283,444

METHOD OF PROTECTING KERATINOUS MATERIAL FROM ATTACK BY INSECTS THAT FEED ON KERATIN BY TREATMENT WITH 5-PHENYLCARBAMOYLBARBITURIC ACID COMPOUNDS

Bernardo de Sousa, Basel; Rene Muntwyler, Hofstetten, and Werner Schmid, Riehen, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

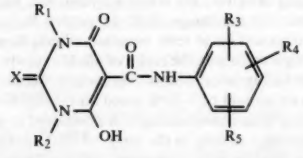
Filed Sep. 6, 1979, Ser. No. 73,048

Claims priority, application Switzerland, Sep. 12, 1978, 9545/78

Int. Cl.³ A01N *43/54*

U.S. Cl. 427—421 **19 Claims**

1. A method of protecting keratinous material from attack by insects that feed on keratin and from feeding damage, which comprises treating said material with compounds of the formula



(1)

or with tautomeric forms and salts thereof, wherein X is oxygen or sulfur, each of R_1 and R_2 independently is alkyl of 1 to 4 carbon atoms, alkenyl of 3 or 4 carbon atoms, benzyl, phenyl or phenyl substituted by alkyl or alkoxy, each of 1 to 4 carbon atoms, chlorine, bromine, fluorine, nitro or trihalomethyl, but at most 1 nitro and at most 2 trihalomethyl and alkoxy, R_3 is halogen, nitro or trihalomethyl, R_4 is hydrogen, halogen or trihalomethyl, and R_5 is hydrogen, halogen, methyl or methoxy.

15. A composition for protecting woollen goods, furs and skins against attack by moths and beetles, which contains one or more of the compounds of the formula (1) as defined in claim **1** and which additionally contains a synthetic pyrethoid, an ester or a thioester of an α-alkyl-substituted phenylacetic acid or a substituted sulfanilide.

4,283,445

NON-WOVEN ORGANIC MULCH BLANKET WITH POLYVINYLACETATE COPOLYMER BINDER

Klaus Bartholl, 1920 Riverfield, Howick, Quebec, Canada (JQS 1G0)

Filed Jun. 25, 1979, Ser. No. 51,895

Int. Cl.³ A01N *3/00*

U.S. Cl. 428—17 **5 Claims**

1. A non-woven mulch composite blanket adapted to be laid on a ground area comprising a sheet-like member made up of randomly oriented organic fibers each having a length not exceeding 2" and a binder of a non-toxic biodegradable polyvinylacetate copolymer such as to form a self-supporting sheet.

4,283,446

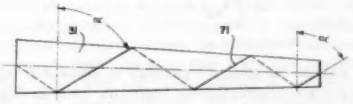
FIBER REINFORCED PLASTIC MEMBERS

Philippe H. McLain, Columbia, S.C., assignor to Shakespeare Company, Columbia, S.C.

Division of Ser. No. 720,907, Sep. 7, 1976, Pat. No. 4,089,727. This application Aug. 12, 1977, Ser. No. 823,977

Int. Cl.³ D03D *13/00*; D02G *3/00*

U.S. Cl. 428—36 **4 Claims**



1. A tubular fiber reinforced plastic member of variable diameter comprising: a resin base; a plurality of substantially contiguous individual reinforcing strands disposed in right and left hand helices without longitudinal reinforcement; the individual reinforcing strands of each hand forming expanded helices having a controlled predetermined lead angle of at least 10° at any point along the length of the member independently of the diameter thereof; the helices of one hand being contained in at least one complete and discrete layer radially disposed of at least one complete and discrete layer comprised of the helices of opposite hand without interweaving of the strands comprising each of the separate layers.

4,283,447
RADIOPAQUE POLYURETHANE RESIN COMPOSITIONS

Vincent J. Flynn, 130 New Rd., Apt. D10, Parsippany, N.J. 07054

Division of Ser. No. 40,278, May 18, 1979, Pat. No. 4,250,072, which is a continuation-in-part of Ser. No. 862,773, Dec. 21, 1977, abandoned, which is a continuation of Ser. No. 712,189, Aug. 6, 1976, abandoned. This application Dec. 28, 1979, Ser. No. 108,393

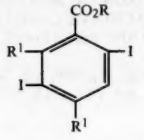
Int. Cl.[3] F16L *9/00, 11/00*

U.S. Cl. 428—36 6 Claims

1. Medical-surgical tubing comprising

(a) a resin which includes from 100 to 33 parts by weight of a thermoplastic polyurethane and from 0 to 67 parts of a polymer of a halogenated vinyl monomer; and

(b) a radiopacifier therfor consisting of a diiodobenzoate or a tetraiodobenzoate compound of the formula



wherein R^1 is hydrogen or iodo, and R is alkyl or alkoxyalkyl and a mixture of said compounds, said radiopacifier (b) comprising 10 to 40 parts by weight per 100 parts by weight of (a) and (b).

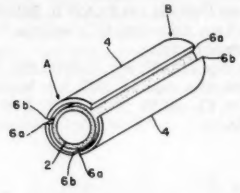
4,283,448
COMPOSITE POLYTETRAFLUOROETHYLENE ARTICLE AND A PROCESS FOR MAKING THE SAME

Jeffery B. Bowman, Flagstaff, Ariz., assignor to W. L. Gore & Associates, Inc., Newark, Del.

Filed Feb. 14, 1980, Ser. No. 121,365

Int. Cl.[3] B29C *27/02;* B29D *23/00*

U.S. Cl. 428—36 4 Claims



1. A process for joining a plurality of shrinkable expanded porous polytetrafluoroethylene segments, each having a microstructure of nodes interconnected by fibrils, such that the microstructure is virtually uninterrupted at the seam joining said segments, comprising the steps of:

(a) arranging said segments such that their edges are disposed in abutting relationship;

(b) causing a pressure to be applied perpindicular to said abutting edges;

(c) causing said segments to be restrained from shrinking in any direction;

(d) heating said segments while they are so held, to a temperature above the crystalline melt point of polytetrafluoroethylene for a predetermined time; and

(e) allowing said segments to cool while still being held restrained and under pressure.

4,283,449
COMPOSITE MATERIAL WITH A CORE AND AN ADHERING COATING UNITED THERETO

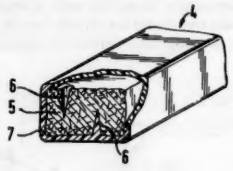
Rudolf Damminger, Schulstrasse 11, 6781 Trulben, Fed. Rep. of Germany

Filed Nov. 30, 1977, Ser. No. 855,833

Claims priority, application Fed. Rep. of Germany, Dec. 18, 1976, 2657463

Int. Cl.[3] B32B *15/08*

U.S. Cl. 428—72 2 Claims



1. A composite structural material consisting essentially of a core body formed of closely folded or crushed metal foil or filaments providing a porous structure of low density and strength, and a rigid synthetic resin coating layer of higher density than the core, formed on substantially all the surfaces thereof, whereby the porosity of the core results in good bonding with the coating layer.

4,283,450
PRODUCT CONTAINING HIGH DENSITY SKINS

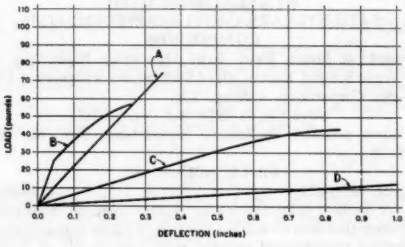
Allan J. Luck, Harvard; John T. Clarke, St. Charles, and Michael R. Hoffman, Elgin, all of Ill., assignors to Masonite Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 739,184, Nov. 5, 1976, Pat. No. 4,175,150. This application Nov. 19, 1978, Ser. No. 95,628

The portion of the term of this patent subsequent to Nov. 20, 1996, has been disclaimed.

Int. Cl.[3] B32B *5/14, 23/04*

U.S. Cl. 428—171 35 Claims



23. A fiberboard or particle board product comprising a base layer comprising cellulosic fibers and a binder, said base layer having a density in the range of 10–65 pounds/ft.[3]; and an integral skin disposed on at least one face of said base layer, said skin having a density in the range of 40–55 pounds/ft[3] and formed by including urea within the surface fibers of said fiberboard, in an amount of 5–20% based on the dry weight of fibers containing urea, consolidating said fiberboard to provide a base layer having a density in the range of 10–35 pounds/ft[3], and thereafter heating said contacted surface fibers, under pressure, at a temperature of at least 525° F., to form said skin during hot-pressing on the surface of said mat containing urea.

4,283,451
LIGHT-TRANSMITTING ROOFING AND CLADDING PANEL

Shoshana Abrahami, Haifa, Israel, assignor to Ziklag Reinforced Plastics, Ltd., Haifa, Israel

Filed Mar. 26, 1979, Ser. No. 23,963

Claims priority, application Israel, Jun. 9, 1978, 54879; Jul. 13, 1978, 55141

Int. Cl.³ B32B *3/28, 27/20*

U.S. Cl. 428—182 **9 Claims**

1. A light transmitting roofing or cladding panel consisting of a translucent, structural, rigid plastic sheet formed into a corrugated panel having two sets of slopes wherein the slopes of each set are respectively substantially identically oriented, the slopes of only one of said sets being provided with a reflecting and opacifying material embedded within the surface of said panel and the slopes of said other set being made translucent to form alternate light transmitting and light reflecting zones of a fixed ratio and wherein the area of the reflecting zones is equal to or greater than that of the light transmitting zones, whereby said panels are adapted upon proper positioning relative to the sun's apparent passage to allow natural daylight to pass therethrough while at the same time, minimizing penetration of the sun's heat radiation.

4,283,452
POLYESTER TEXTILE MATERIAL HAVING IMPROVED OPACITY

Francis W. Marco, Pauline, S.C., assignor to Milliken Research Corporation, Spartanburg, S.C.

Continuation-in-part of Ser. No. 72,959, Sep. 6, 1979, abandoned, which is a continuation-in-part of Ser. No. 40,032, May 17, 1979, abandoned. This application Mar. 10, 1980, Ser. No. 128,619

Int. Cl.³ B32B *3/00*

U.S. Cl. 428—206 **21 Claims**

1. A polyester fiber-containing textile material having improved opacity and handle characteristics, which comprises a polyester fiber-containing substrate; said textile fibers having been covered with titanium dioxide particles having an average particle size of at least about 0.18 micron in an amount of up to about 20 percent based upon the weight of the textile material, the durability of bonding of said particles to said textile fibers in the absence of a binder as the primary bonding means being such that at least about 50 percent of said particles remain bound to the surface of said textile fibers after five standard AATCC washings.

4,283,453
BIAXIALLY STRETCHED POLYPROPYLENE COMPOSITE FILM AND ELECTRICAL INSULATING FILM MADE THEREFROM

Walter Siefried; Siegfried Janocha, both of Wiesbaden, and Günther Crass, Taunusstein, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Nov. 29, 1979, Ser. No. 98,549

Claims priority, application Fed. Rep. of Germany, Nov. 29, 1978, 2851557

Int. Cl.³ B32B *7/02, 27/32;* **H01G** *4/18*

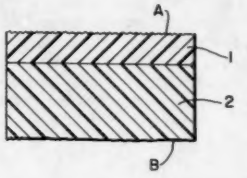
U.S. Cl. 428—212 **17 Claims**

1. A biaxially stretched, composite polypropylene film suitable for use as an electrical insulating film, comprising

a first layer comprising a first propylene polymer and having a maximum roughness height R_z of its exposed surface of about 0.15 μm, and

a second layer contiguous to said first layer comprising a second propylene polymer having a composition different from said first propylene polymer and having a roughness height R_z on its exposed surface ranging between about 0.2 μm and 0.4 μm,

said composite film being biaxially stretched and having a



modulus of elasticity of at least about 2000 N/mm² in all directions of the plane of the film and a DC dielectric strength of at least about 650 V/μm, said composite film having been produced by the steps consisting essentially of joining said first and second layers together and subjecting the resulting composite film to biaxial stretching, and wherein the differences in said first and second propylene polymers are sufficient to produce said different roughness heights during said biaxial stretching.

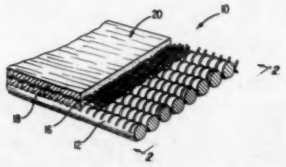
4,283,454
PAPERMAKERS WET FELT WITH RIBBED AND SMOOTH SURFACE TEXTURES

Robert D. Buchanan, Wilson, N.C., assignor to Porritts & Spencer Inc., Wilson, N.C.

Filed Feb. 8, 1980, Ser. No. 119,841

Int. Cl.³ B32B *5/06*

U.S. Cl. 428—233 **26 Claims**



1. A papermakers felt comprising:

a first cloth woven from a first plurality of machine direction and cross machine direction yarns in accordance with a preselected weave pattern, said machine direction yarns being of greater diameter than said cross machine direction yarns, said first cloth defining alternating machine direction abrasion-resisting ribs and machine direction drainage grooves across the width of said first cloth, said ribs being formed by said machine direction yarns, with the frequency of said ribs and the widths of said grooves being determined by said weave pattern;

a second cloth woven from a second plurality of machine direction yarns and cross machine direction yarns to define a plurality of drainage interstices, said second cloth being in surface contact with said first cloth; and

a web of non-woven fiber in surface contact with said second cloth, select fibers of said web being displaced from said web and extending through said first and second cloths to hold said web and said first and second cloths together.

4,283,455

PRODUCTION OF COVER FABRICS FOR V BELTS WHICH FUNCTION AS WEAR INDICATORS DUE TO DIFFERENT LAYER CHARACTERISTICS

James N. McGee, Pleasant Garden, N.C., assignor to Burlington Industries, Inc., Greensboro, N.C.

Filed Nov. 19, 1979, Ser. No. 95,675
Int. Cl.[3] B05D 5/06; B32B 25/02, 25/08, 25/10; F16G 5/06
U.S. Cl. 428—240 19 Claims

1. An industrial cover fabric for power transmission belts or the like, consisting of a strip of bias cut fabric woven from blended fiber yarns, the individual fibers of said yarns being encapsulated in a dried pigmented elastomeric polymer, and said yarns and encapsulated fibers being over coated with a dried elastomeric polymer, the angular orientation between the warp and weft yarns of said woven fabric being increased to an angle greater than 90° and being held in that position by the dried elastomeric coating, said industrial cover fabric having greatly increased wear life by virtue of said individual fiber encapsulation, the pigment in said pigmented elastomeric polymer being adapted to abrade off with said polymer to reveal unpigmented portions of said fibers when said fabric has outlived its usefulness.

5. A method of making a cover fabric for V belts or the like, comprising the steps of

(a) cutting a fabric into a continuous strip of fabric;

(b) impregnating the individual fibers in the continuous strip of fabric with an elastomeric polymeric material effective to increase the wearlife of the fabric when used as a cover fabric for V belts or the like;

(c) applying an elastomeric coating to the strip;

(d) stretching the strip in its width direction to increase the angular relation of the threads of the fabric relative to its longitudinal axis; and

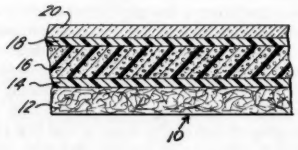
(e) drying the thus coated strip.

4,283,456

PERMEATION RESISTANT COVERING MATERIAL

Walter Creasy, Bridgewater, N.J., assignor to GAF Corporation, New York, N.Y.

Filed Dec. 26, 1979, Ser. No. 107,206
Int. Cl.[3] B32B 5/18, 17/10, 19/08, 27/30
U.S. Cl. 428—282 7 Claims



1. Sheet-type covering material comprising:

(a) a moisture permeable backing layer which is dimensionally stable under varying moisture conditions and resistant to degradation from water;

(b) an intermediate open-cellular foamed resinous layer overlying the backing layer; and

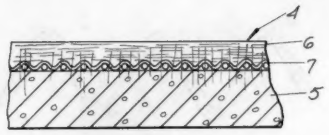
(c) a resinous wear layer overlying the intermediate layer; said backing layer being sealed at its surface adjacent the intermediate layer with a discrete continuous vinyl halidevinylidene halide polymer latex seal coat.

4,283,457

LAMINATE STRUCTURES FOR ACOUSTICAL APPLICATIONS AND METHOD OF MAKING THEM

Rodger E. Kolsky, Schenectady, and Raymond Z. Naar, Delmar, both of N.Y., assignors to Huyck Corporation, Wake Forest, N.C.

Filed Nov. 5, 1979, Ser. No. 91,601
Int. Cl.[3] B32B 5/06, 5/20, 5/26; E04B 1/82
U.S. Cl. 428—285 26 Claims



1. A laminate structure for acoustical applications comprising a facing layer and a backing layer, said facing layer comprising a porous non-woven, needle punched mat of inherently non-flammable, fine fibers chosen from the class consisting of glass and mineral fibers, said backing layer comprising a flame retardant layer chosen from the class consisting of a layer of open cell foam, a glass fiber batt and a mineral fiber batt, said facing and backing layers being bonded together.

8. The structure claimed in claim 1 wherein said fine fiber mat of said facing layer is needle punched to a reinforcing layer chosen from the class consisting of a glass fiber scrim and woven and non-woven fabrics of flame retardant fibers, the reinforced facing layer being treated with a low flammability resin binder for integrity and abrasion resistance.

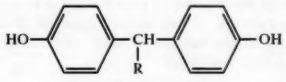
4,283,458

HEAT-SENSITIVE RECORDING PAPER CONTAINING A NOVEL ELECTRON ACCEPTING COMPOUND

Akira Igarashi, Fujinomiya, and Kozo Sato, Minami-ashigara, both of Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Jul. 17, 1979, Ser. No. 58,399
Claims priority, application Japan, Aug. 18, 1978, 53-100599
Int. Cl.[3] B32B 9/04, 21/04
U.S. Cl. 428—341 8 Claims

1. A heat-sensitive recording sheet consisting essentially of a support and a recording layer containing an electron donating colorless dye and a compound represented by the following formula:



wherein R represents an alkyl group containing 5 to 8 carbon atoms.

4,283,459

INSULATING COMPOSITION AND ARTICLES MADE THEREFROM

Edward J. Urban, Kennett Square, Pa., and William P. Vitcusky, Newark, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 9, 1979, Ser. No. 65,095
Int. Cl.[3] B32B 15/00
U.S. Cl. 428—379 7 Claims

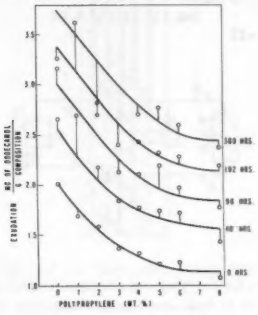
1. A composition of matter consisting essentially of a homogeneous combination of:

(a) polyethylene;

(b) monohydric alcohol of 6 to 24 carbon atoms in an amount of 0.1 to 7 weight percent of the polyethylene; and

(c) polypropylene in an amount effective to mitigate exudation of the alcohol from the polyethylene as measured by Test Method II.

3. An article comprising an electrical conductor and an insulating layer consisting essentially of



(a) polyethylene;

(b) monohydric alcohol of 6 to 24 carbon atoms in an amount of 0.1 to 7 weight percent of the polyethylene;

(c) polypropylene in an amount effective to mitigate exudation of the alcohol from the polyethylene as measured by Test Method II.

4,283,460

AROMATIC TRIAZOLES AND ALKYLAMINE BORATES FOR INCREASED SURFACE PROTECTION AND IMPROVED ADHESION OF BRASS-COATED STEEL TO RUBBER

Robert M. Shemenski, Sr., North Canton, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 567,586, Apr. 14, 1975. This application May 8, 1980, Ser. No. 147,818

Int. Cl.[3] **B32B** *9/00, 15/06;* **D02G** *3/00;* **B44D** *1/42*

U.S. Cl. 428—389 **14 Claims**

1. A method of improving the adhesion between brass-coated steel tire cord and rubber comprising (A) treating the brass-coated steel tire cord with benzotriazole to form a layer of polymeric complex of benzotriazole and copper over substantially all of the brass surface and (B) vulcanizing a composite of the treated cord and rubber; where at least one portion of the benzotriazole is added to the rubber adjacent to the cord.

3. The vulcanized composite produced according to the method of claim **1**.

4,283,461

PIEZOELECTRIC POLYMER ANTIFOULING COATING

Bruce J. Wooden, Dickerson, and Seymour Edelman, Silver Spring, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 31, 1979, Ser. No. 44,130

Int. Cl.[3] **B32B** *27/00*

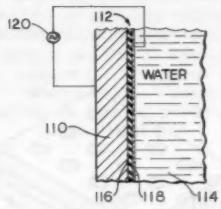
U.S. Cl. 428—422 **15 Claims**

1. A coating for reducing fouling on marine structures comprising:

a film containing piezoelectric polymer secured over substantially the entire surface of the marine structure and separating said surface from water which contains animal and vegetable fouling organisms;

said film having one of its sides in electrical contact with the surface of the marine structure and its other side in electrical contact with the water with which it interfaces;

an electrical power source applying alternating signal across the film;



said alternating signal having a wave form with a quick reversal of direction at its peak thereby causing the film to flick sharply at the film surface for throwing off attaching organisms.

4,283,462

PHENOLIC LAMINATES WITH FURAN RESIN COATING

Nicolas Meyer, Bully les Mines, and Leon Schuller, Noisy le Roi, both of France, assignors to Societe Chimiques des Charbonnages, Paris, France

Filed Jan. 24, 1980, Ser. No. 114,877

Claims priority, application France, Jan. 25, 1979, 79 01888

Int. Cl.[3] **B32B** *27/08*

U.S. Cl. 428—506 **13 Claims**

1. A process for producing a reinforced phenolic resin laminate coated with a surface layer on at least one side, said surface layer consisting essentially of a furan resin coating which is directly bonded to the reinforced phenolic resin laminate, comprising depositing said coating of furan resin on a mold, then after at least a beginning of hardening, depositing alternate layers of phenolic resin and reinforcing agent, hardening the laminate, and then withdrawing resultant laminate from the mold, said laminate having no surface irregularities due to pitting or fiber projection.

4,283,463

MOLDED PRODUCTS OF POLYPROPYLENE

Akinobu Shiga; Kiyoshi Matsuyama; Masahiro Kakugo; Yukio Naito, and Seiichiro Ima, all of Niihama, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Dec. 13, 1979, Ser. No. 103,133

Claims priority, application Japan, Dec. 13, 1978, 53/155973; Dec. 29, 1978, 53/165134

Int. Cl.[3] **B32B** *27/32;* **C08F** *110/06*

U.S. Cl. 428—512 **21 Claims**

1. A stretched film, for use in electrical insulation, prepared from a polypropylene having an isotactic pentad fraction of the boiling heptane insoluble portion of at least about 0.955 and a content of the boiling heptane soluble portion of about 2.0 to 9.0% by weight.

12. A laminated paper, for use in electrical insulation, produced by laminating a polypropylene, having an isotactic pentad fraction of the boiling heptane insoluble portion of at least about 0.955 and a content of the boiling heptane solution portion of about 2.0 to 9% by weight, on a fibrous paper.

4,283,464

PREFABRICATED COMPOSITE METALLIC HEAT-TRANSMITTING PLATE UNIT

Norman Hascoe, 791 Weaver St., Larchmont, N.Y. 10538

Filed May 8, 1979, Ser. No. 37,236

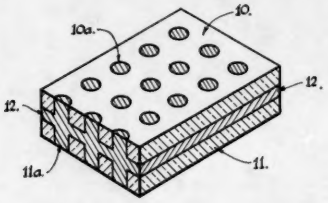
Int. Cl.[3] **B21D** *39/00;* **B32B** *3/12*

U.S. Cl. 428—594 **9 Claims**

1. A prefabricated composite metallic plate unit for transmit-

ting heat from a heat source to a heat-absorbing medium, having opposed planar surfaces adapted individually to engage the heat source and the heat-absorbing medium, and having a relatively high heat-transfer coefficient, said plate unit comprising:

a pair of high-tensile-strength metallic plate members having



a temperature coefficient of expansion approximately the same as that of said heat source;

a plurality of holes extending through each of said members;

and a layer of relatively malleable metallic material interposed between said members and filling said holes and having a heat-transfer coefficient of at least about 0.3 cal./cm^2/cm/sec./°C.

4,283,465

POROUS BODY OF ALUMINUM OR ITS ALLOY AND A MANUFACTURING METHOD THEREOF

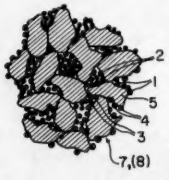
Toru Morimoto, Ichikawa; Tsuyoshi Ohsaki; Toshio Ohkawa, both of Narashino, and Kenji Matsuzawa, Yokohama, all of Japan, assignors to Nippon Dia Clevite Co., Ltd., Narashino, Japan

Filed Aug. 23, 1978, Ser. No. 936,151

Claims priority, application Japan, Sep. 7, 1977, 52-106822

Int. Cl.^{3} H01F *3/02*

U.S. Cl. 428—566 **11 Claims**



1. A porous body having excellent sound absorbing properties composed of a sintered body of stick-shaped, needle-shaped, oval-shaped or other irregular-shaped particles of a base material of aluminum or aluminum alloy powder and a second material of alumium alloy powder having a melting point at least 10° C. lower than the melting point of said base material, said porous body having a network of connecting pores communicating with the surface of said body with a pore ratio of 33 to 50% of the total volume of the body.

4,283,466

CHEMICAL AND ELECTROCHEMICAL PROCESS

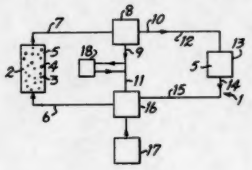
Jean-Yves Machat, Clermont-Ferrand, France, assignor to Compagnie Generale des Etablissements Michelin, Clermont-Ferrand, France

Division of Ser. No. 59,075, Jul. 19, 1979, Pat. No. 4,245,011. This application May 15, 1980, Ser. No. 150,233

Claims priority, application France, Jul. 27, 1978, 78 22545; Jul. 27, 1978, 78 22546

Int. Cl.^{3} H01M *8/04*

U.S. Cl. 429—15 **3 Claims**



1. A process for carrying out chemical and/or electrochemical reactions in at least one reaction chamber traversed by a suspension of particles in a fluid, characterized by:

(a) separating the suspension emerging from the chamber into two fractions, the separation being effected at least in part by centrifugation:

one fraction, called the "concentrated fraction," comprising the greater part or all of the particles,

one fraction, called the "fluid fraction," comprising the greater part or all of the fluid;

(b) introducing the "fluid fraction" into at least one reservoir;

(c) causing a flow of the fluid from the reservoir in such a manner that the reaction product or products contained in the "fluid fraction" and introduced into the reservoir with said fraction remain in the reservoir or are entrained by said flow; combining said flow with the "concentrated fraction" in order to form a suspension; and

(d) introducing the suspension thus formed into the reaction chamber.

4,283,467

ELECTRIC STORAGE BATTERY WITH GAS DRIVEN ELECTROLYTE MOVEMENT

Karl-Friedrich Gütlich, Frankfurt; Wolfgang Kappus, Viernheim; Herbert Zweigardt, Kelkheim, and Rudolf Eckardt, Steinbach, all of Fed. Rep. of Germany, assignors to Varta Batterie Aktiengesellschaft, Hanover, Fed. Rep. of Germany

Filed Feb. 28, 1980, Ser. No. 125,464

Claims priority, application Fed. Rep. of Germany, Mar. 29, 1979, 2912527

Int. Cl.^{3} H01M *2/38*

U.S. Cl. 429—51 **6 Claims**

1. An electric storage battery with gas driven electrolyte flow between the electrode plates united into a plate block in accordance with the bubble pump principle, comprising

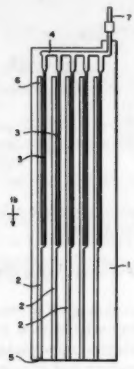
at least two parallel extending transport pipes located on a base plate of non-conducting material,

the transport pipes having gas supply ducts connected thereto,

the base plate being adapted to be inserted between the plate block and the housing wall,

the upper outlet apertures of the transport pipes lying below

the minimum height of the electrolyte level on the side facing the plate block, and



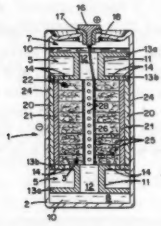
the upper edge of the base plate being above the ou..et openings.

4,283,468

ELECTROCHEMICAL CELL INSENSITIVE TO PHYSICAL ORIENTATION

Franz Goebel, Sudbury, and Cyril Morgan, Manchester, both of Mass., assignors to GTE Products Corporation, Stamford, Conn.

Filed Apr. 29, 1980, Ser. No. 145,177
Int. Cl.³ H01M *2/38*
U.S. Cl. 429—81 **17 Claims**



1. A primary electrochemical cell insensitive to physical orientation over the rated life span of the cell, comprising:

an elongated housing having first and second ends and containing an electrochemical system therewithin, said electrochemical system comprising:

a battery stack fixedly disposed intermediate to the first and second ends of the housing and defining first and second reservoirs with said first and second ends, respectively;

channel means in communication with the first and second reservoirs for permitting bi-directional passage therebetween of electrolyte solution; and

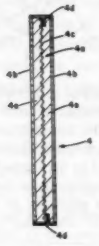
a liquid electrolyte solution supplied to and in contact with the battery stack and present within the first and second reservoirs and the channel means, said electrolyte solution being chemically reactive with the battery stack and being initially present in the cell in an amount related to the rated life span of the cell, said electrolyte solution including a component consumable during discharge of the cell by chemical reaction within the cell resulting in the electrolyte solution undergoing a loss in volume, said first and second reservoirs and the channel means cooperating in the event of a change in the physical orientation of the cell over its rated life span to shift the electrolyte solution within the cell so as to continue to supply electrolyte solution to the battery stack.

4,283,469

INTEGRATED ELECTRODE/SEPARATOR STRUCTURES

Franz Goebel, Sudbury, and Carl R. Schlaikjer, Winchester, both of Mass., assignors to GTE Products Corp., Stamford, Conn. and GTE Laboratories Inc., Waltham, Mass.

Filed Mar. 31, 1980, Ser. No. 135,417
Int. Cl.³ H01M *6/14*
U.S. Cl. 429—196 **5 Claims**



1. An electrochemical cell comprising:

an anode electrode;

an electrode/separator structure adjacent to the anode electrode; and

an electrolytic solution in contact with the anode electrode and the electrode/separator structure;

said electrode/separator structure comprising

a metallic substrate having a plurality of interstice-defining members,

an aggregate of discrete, semi-rigid, porous carbon conglomerates physically pressed into and supported by the interstice-defining members of the metallic substrate and defining a network of channels through the resultant structure by which said structure may be permeated by the electrolytic solution, said carbon conglomerates including carbon black and a binder, and

an adherent porous layer of an electrically non-conductive material deposited on and physically integrated with the aggregation of carbon conglomerates of the electrode/-separator structure, the material of said layer being chemically stable with the anode electrode, the metallic substrate, the carbon conglomerates and the electrolytic solution and being permeable by the electrolytic solution, said adherent porous layer consisting essentially of a material selected from the group consisting of aluminum oxide, magnesium silicate, zirconium oxide, talc, a molecular seive, and combinations thereof.

4,283,470

ANODE STRUCTURE FOR AN ELECTROCHEMICAL CELL

Roger K. Freeman, Plymouth, and Franz Goebel, Sudbury, both of Mass., assignors to GTE Products Corporation, Stamford, Conn.

Filed Jun. 13, 1980, Ser. No. 159,269
Int. Cl.³ H01M *4/02*
U.S. Cl. 429—209 **18 Claims**

1. A contact member comprising:

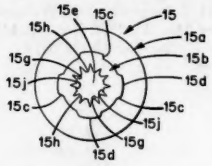
a resilient metal member of a predetermined thickness and configuration and having a plurality of spikes depending therefrom at its periphery and further having a major opening therein and a plurality of other openings at the perimeter of the major opening defining a plurality of

resilient, deflective portions intermediate to said other openings and each having an exposed edge.

11. An anode structure for an electrochemical cell, comprising:

a metal disc of a predetermined thickness and having an opening therein; and

a resilient, metal contact member of a predetermined thickness and configuration and having a plurality of spikes



depending therefrom at its periphery and inserted into the metal disc at points spaced from the opening in the metal disc for securing the contact member to the metal disc, said metal contact member further having a major opening therein adjacent to the opening in the metal disc and a plurality of other openings at the perimeter of the major opening defining a plurality of resilient, deflective portions intermediate to said other openings.

4,283,471

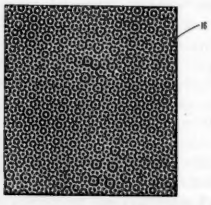
PRINTING SCREEN AND METHOD OF MAKING SAME

Frank A. Sportelli, 7 Redwood Ct., Glen Cove, N.Y. 11542

Filed Nov. 2, 1979, Ser. No. 90,763

Int. Cl.[3] **G03F** *5/00;* **G03C** *5/00*

U.S. Cl. 430—6 **17 Claims**



1. A method of making a photoprinting image element, said method comprising:

(a) providing a negative screen having two sets of parallel equispaced lines located thereon, each said set being perpendicular to each other,

(b) providing a photographic film to be exposed,

(c) exposing the negative screen onto the photographic film in at least three separate exposures,

(d) said negative screen being disposed at a predetermined angle in each said separate exposure,

(e) each said predetermined angle being at a different angle with respect to each other, and

(f) developing the exposed photographic film to produce a photoprinting image element having a regular screen pattern as shown in FIG. 2.

4,283,472

SILVER HALIDE ELEMENTS CONTAINING BLOCKED PYRAZOLONE MAGENTA DYE-FORMING COUPLERS

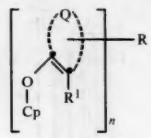
Thomas E. Gompf; Howell A. Hammond, and Jared B. Mooberry, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 26, 1980, Ser. No. 124,872

Int. Cl.[3] **G03C** *7/00*

U.S. Cl. 430—17 **18 Claims**

12. A processed photographic element containing a magenta dye image comprised of a magenta dye obtained by coupling of oxidized silver halide color developing agent and a nondiffusible magenta dye-forming coupler having the structure:



wherein:

Q represents the atoms to complete a 5-pyrazolone magenta dye-forming coupler moiety;

n is 1 or 2;

R is a ballast group when n is 1 or a divalent organic group when n is 2;

R^1 is hydrogen or a coupling-off group; and

Cp is a coupler moiety which upon reaction by means of oxidized color developing agent yields a colorless or alkali soluble reaction product and is attached at its coupling position to the enol oxygen of the pyrazolone coupler moiety;

there remaining in areas where magenta dye has not been formed, the blocked magenta dye forming coupler.

4,283,473

ELECTROPHOTOGRAPHIC SHEET MATERIAL

Colin H. Lewinton, Montreal, Canada, and Joseph Savit, Glencoe, Ill., assignors to Domtar Inc., Montreal, Canada

Filed Jan. 29, 1979, Ser. No. 7,493

Int. Cl.[3] **G03G** *5/08, 5/10*

U.S. Cl. 430—64 **1 Claim**

1. An electrophotographic sheet material comprising: a cellulosic base material, a continuous barrier film consisting of cellulose nitrate on said base material, and a photoconductive layer comprising zinc oxide on the surface of said film remote from said base material, wherein said cellulosic base material consists of a base paper, said continuous barrier film of cellulose nitrate constitutes between $\frac{1}{2}$ and 6 lb. per ream (3,300 ft^2) of said sheet material.

4,283,474

OLEOPHILIC RESIN ENCAPSULATES PHOTOCONDUCTIVE ZINC OXIDE PARTICLES DISPERSED IN VINYL CHLORIDE AND VINYL ACETATE RESIN BINDER FOR ELECTROPHOTOSENSITIVE RECORDING LAYER

Tadashi Kaneko; Takeo Shimura; Masanori Matsumoto; Hiroyuki Moriguchi, and Hiroyuki Nomori, all of Hachioji, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Sep. 19, 1980, Ser. No. 188,612

Claims priority, application Japan, Sep. 25, 1979, 54-122092

Int. Cl.[3] **G03** *5/087*

U.S. Cl. 430—69 **7 Claims**

1. A photosensitive element for electrophotography which comprises on a conductive support a photoconductive layer comprising photoconductive zinc oxide particles the surface of which particles has been encapsulated, together with a sensitizer for said zinc oxide, with an oleophilic resin material, said encapsulated zinc oxide particles having been dispersed in a binder resin containing vinyl chloride and vinyl acetate as components thereof.

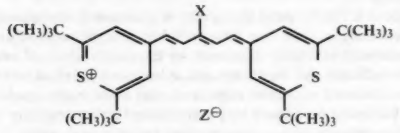
4,283,475

PENTAMETHINE THIOPYRYLIUM SALTS, PROCESS FOR PRODUCTION THEREOF, AND PHOTOCONDUCTIVE COMPOSITIONS CONTAINING SAID SALTS

Koichi Kawamura; Harumi Katsuyama, and Hideo Sato, all of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Aug. 20, 1980, Ser. No. 180,058
Claims priority, application Japan, Aug. 21, 1979, 54-105548; Nov. 5, 1979, 54-142034
Int. Cl.³ G03G 5/09
U.S. Cl. 430—70 29 Claims

1. A photoconductive composition comprising a photoconductive material and a 2,6-di-tert-butyl-4-[5-(2,6-di-tert-butyl-4H-thiopyran-4-ylidene)penta-1,3-dienyl]thiopyrylium salt of chemical structural formula (I)



(I)

wherein $Z^{\ominus}$ represents an anion, and X represents a hydrogen atom, a halogen atom, an alkyl group or an aryl group.

4,283,476

PHOTOGRAPHIC ELEMENT HAVING A MAGNETIC RECORDING STRIPE OVERLYING AN ANTISTATIC LAYER

Gary V. Farnsworth, Newark; Gerald C. Gandy, Rochester, and Hugh W. Richards, Webster, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 25, 1980, Ser. No. 180,795
Int. Cl.³ G03C 1/78
U.S. Cl. 430—140 32 Claims

1. A photographic element comprising a support having on one side thereof at least one radiation-sensitive layer and on the opposite side an antistatic layer comprising a phosphate ester antistatic agent, said element additionally comprising a magnetic recording stripe overlying said antistatic layer, said magnetic recording stripe comprising magnetic particles dispersed in a polymeric binder and containing a carboxylic acid salt of a polyvalent metal in an amount sufficient to enhance the adhesion of said stripe to said element.

4,283,477

PHOTOTHERMOGRAPHIC MATERIAL AND PROCESS

George L. Fletcher, Jr., Pittsford; Richard A. deMauriac, Webster, and Stewart H. Merrill, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 2, 1978, Ser. No. 956,828
Int. Cl.² G03C 1/52, 1/48, 1/40
U.S. Cl. 430—141 18 Claims

1. In a photothermographic element comprising (A) at least one photosensitive layer comprising a diazo or silver halide photosensitive component, (B) at least one layer comprising a processing agent for said photosensitive component and (C) a separation polymer between said photosensitive component and said processing agent,

the improvement wherein

said separation polymer (C) comprises a polysulfonamide which has the property of producing increased preexposure storage stability for said element.

4,283,478

LIGHT-SENSITIVE MATERIAL FOR PREPARING A LITHOGRAPHIC PRINTING PLATE AND A PROCESS USING THE SAME

Kikuo Kubotera, and Akira Kashiwabara, both of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed May 16, 1979, Ser. No. 39,479
Claims priority, application Japan, May 19, 1978, 53/59796
Int. Cl.³ G03C 5/00, 1/52
U.S. Cl. 430—156 23 Claims

1. A light-sensitive lithographic printing plate forming material comprising a support having a hydrophilic surface provided in order with a layer of a positive-working light-sensitive resin composition which comprises an o-quinone diazide compound and which is capable of forming an oleophilic image, a tannable interlayer containing a tanning developing agent, which interlayer is a silver halide emulsion layer wherein the amounts of the tanning developing agent and the silver halide therein are 0.01 to 100 mmols and 0.01 to 10 mmols, respectively, per square meter of area and 1μ of dry thickness of the interlayer and a tannable second light-sensitive silver halide emulsion layer containing a tanning developing agent, wherein the tanning developing agent is present in the light-sensitive silver halide emulsion layer in an amount of about 0.01 to 100 mmols per 1μ thickness and square meter of the second silver halide emulsion layer, and wherein the amounts of tanning developing agent and silver halide in the interlayer are less than the amounts thereof in the light-sensitive silver halide emulsion layer.

11. A process of preparing a lithographic printing plate which comprises: (1) imagewise exposing a light-sensitive lithographic printing plate material comprising a support having a hydrophilic surface provided in order with a layer of a positive-working light-sensitive resin composition which comprises an o-quinone diazide compound and which is capable of forming an oleophilic image, a tannable interlayer containing a tanning developing agent, which interlayer is a silver halide emulsion layer wherein the amounts of the tanning developing agent and the silver halide therein are 0.01 to 100 mmols and 0.01 to 10 mmols, respectively, per square meter of area and 1μ of dry thickness of the interlayer and a tannable light-sensitive silver halide emulsion layer containing a tannable developing agent such that a silver image is formed in the light-sensitive silver halide emulsion layer by the subsequent activating processing with an alkali solution, wherein the tanning developing developing agent is present in the light-sensitive silver halide emulsion layer in an amount of about 0.01 to 100 mmols per 1μ thickness and square meter of the light-sensitive silver halide emulsion layer, and wherein the amounts of tanning developing agent and silver halide in the interlayer are less than the amounts thereof in the light-sensitive silver halide emulsion layer, (2) forming a tanned silver image by activation processing using an alkali solution, (3) washing off portions of the silver halide emulsion layer where no silver images have been formed to thereby leave tanning-hardened silver image portions on said light-sensitive resin composition layer, thus forming a hardened relief silver image, (4) uniformly irradiating with light to which said light-sensitive resin composition is sensitive, in an amount such that the light-sensitive resin composition layer in the areas where the relief silver image is not present will dissolve in an alkaline developer, and (5) developing the material with an alkaline developer capable of dissolving the light-sensitive resin composition layer in areas where the relief silver image does not exist to thereby form a relief image comprising the insoluble portions of the light-sensitive resin composition layer and the hardened relief silver image lying thereon.

4,283,479

SILVER HALIDE PHOTOGRAPHIC MATERIALS AND A PROCESS FORMING RELIEF IMAGES

Tsutomu Hamaoka, and Yasuo Kasama, both of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

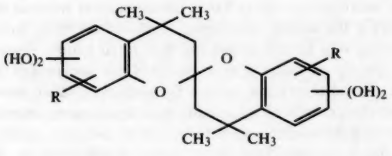
Filed Feb. 22, 1980, Ser. No. 123,611

Claims priority, application Japan, Feb. 26, 1979, 54/21650

Int. Cl.³ G03C *1/48, 5/00*

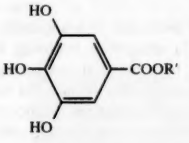
U.S. Cl. 430—264 **10 Claims**

7. A process for forming relief images which comprises imagewise exposing a silver halide photographic material comprising a support having thereon at least a photosensitive silver halide photographic emulsion layer and at least one of said photosensitive silver halide emulsion layer or another hydrophilic colloid layer on said support containing a compound of the formula (I):



(I)

wherein R represents a hydrogen atom or an alkyl group having 1 to 10 carbon atoms, and a compound of the formula (II):



(II)

wherein R′ represents an alkyl group having 1 to 10 carbon atoms, and developing said imagewise exposed material with an alkaline aqueous solution.

4,283,480

PHOTOPOLYMERIZABLE COMPOSITIONS, METHODS FOR THEIR PREPARATION, AND METHODS FOR THEIR USE IN COATING SUBSTRATES

William D. Davies, Littleborough; Graham G. Skelhorne, Prestwich, and John B. Warren, Malpas, all of England, assignors to Diamond Shamrock Industrial Chemicals Limited, Great Britain

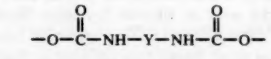
Filed Oct. 1, 1979, Ser. No. 80,545

Claims priority, application United Kingdom, Oct. 3, 1978, 39149/78

Int. Cl.³ B05D *3/06*

U.S. Cl. 430—270 **8 Claims**

1. A process for soldering electrical components on a circuit board which comprises protecting areas of the board by applying thereto a photopolymerisable liquid composition which on curing forms a solder resist and which comprises a polymerisable component which is a polymer having an average of at least two terminal groups per molecule, which groups provide ethylenic double bonds by which the polymer may be further polymerised and which groups are attached to the remainder of the polymer molecule by groups of the formula:



which are the residues of a polyisocyanate, a polythiol as a chain modifier, and a photoinitiator capable of initiating polymerisation of the polymerisable component upon UV-irradiation, curing the composition to form the solder resist and soldering electrical components to the protected areas of the board.

4,283,481

ELEMENT HAVING PHOSPHINE ACTIVATED PHOTOSENSITIVE COMPOSITIONS THEREIN

Sakuo Okai, Carlsbad, and Koichi Kimoto, Oceanside, both of Calif., assignors to Napp Systems (USA) Inc., San Marcos, Calif.

Division of Ser. No. 70,190, Aug. 27, 1979, Pat. No. 4,233,391, which is a continuation-in-part of Ser. No. 941,519, Sep. 9, 1978, abandoned. This application Jun. 23, 1980, Ser. No. 161,757

Int. Cl.³ G03C *1/78*

U.S. Cl. 430—271 **6 Claims**

1. A photosensitive element comprising a substrate and a layer of water developable photopolymerizable composition including:

a. about 0.1 to 3.0 parts by weight of a monomer component including at least one water-soluble, monofunctional unsaturated ethylenic monomer, or the combination of said monofunctional monomer and at least one polyfunctional unsaturated ethylenic monomer, said monomers capable of forming a polymer by photoinitiated polymerization in the presence of a polymerization initiator activatable by actinic light;

b. about 0.1 to 3.0 parts by weight of a polymer component including a partially saponified, water-soluble, polyvinyl acetate polymer compatible with said monomer component containing both acetyl and hydroxy groups, and having a polymerization degree of about 300 to 2,000 and a saponification degree of about 65 to 99 mole percent;

c. about 0.001 to 0.3 parts by weight of a photopolymerization initiator compatible with said monomer component and said polyvinyl acetate polymer, and activatable by actinic light; and,

d. about 0.001 to 0.3 parts by weight of an activator including a phosphine derivative described by the formula:

wherein any of X, Y and Z are hydrogen, halogen, alkyl, alkoxy, aryl, or vinyl, but not more than one of the X, Y and Z is hydrogen, and wherein at least one of X, Y and Z is aryl.

4,283,482

DRY LITHOGRAPHIC PROCESS

Shuzo Hattori, and Shinzo Morita, both of Nagoya, Japan, assignors to Nihon Shinku Gijutsu Kabushiki Kaisha, Japan

Filed Mar. 25, 1980, Ser. No. 133,865

Claims priority, application Japan, Mar. 29, 1979, 54-36307

Int. Cl.³ G03C *5/00;* **B44C** *1/22;* **C03C** *15/00, 25/06*

U.S. Cl. 430—296 **6 Claims**

1. A dry lithographic process comprising the consecutive steps of:

(i) introducing at least one ethylenically unsaturated monomer compound in the vapor form into a vacuum vessel where said monomer compound is, at least in part, excited in a plasma atmosphere and deposited onto the surface of a substrate located in the vacuum vessel to form a plasma-polymerized film on said substrate,

(ii) exposing the film thus formed on the substrate to a controlled beam of electrons in conformity to the predetermined pattern to degrade the polymer in the exposed part of the film, and

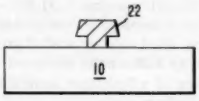
(iii) removing the degraded part of the polymer from the film by development in vapor phase etching atmosphere.

4,283,483

PROCESS FOR FORMING SEMICONDUCTOR DEVICES USING ELECTRON-SENSITIVE RESIST PATTERNS WITH CONTROLLED LINE PROFILES

Philip J. Coane, Mahopac, N.Y., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Jul. 19, 1979, Ser. No. 59,010
Int. Cl.[3] H01L *21/283*
U.S. Cl. 430—296 7 Claims



1. A process for forming a conductive electrode of variable cross-section area which comprises the steps of:

(a) providing a three layer mask on a substrate with the first or inner layer and third or outer layer being of a chosen electron-sensitive resist material and separated by an intermediate etch resistant conductive layer;

(b) defining predetermined patterns in said first layer and said third layer of resist simultaneously by electron bombardment which penetrates said conductive layer;

(c) forming a first opening in said third layer while shielding said first layer with said conductive layer, said first opening having a first chosen width;

(d) successively removing portions of said intermediate and first layers to thereby produce second and third openings therein, said second opening in said intermediate layer having a second chosen width substantially equal to said first width of said first opening and said third opening in said first layer having a third chosen width smaller than said first and second widths; and

(e) depositing a chosen metal in said openings formed in (c) and (d) above to thereby form said electrode of variable cross-section area, and with variable width essential replicating said widths of said first, second, and third openings.

4,283,484

METHOD OF MAKING RELIEF PRINTING PLATES WITH CONCAVE PRINTING AREAS

Michael J. B. Fairhead, and Nicholas R. Jung, both of London, England, assignors to Letraset USA, Inc., Paramus, N.J.

Division of Ser. No. 875,554, Feb. 6, 1978, abandoned. This application Jan. 19, 1979, Ser. No. 4,618
Claims priority, application United Kingdom, Feb. 7, 1977, 4911/77
Int. Cl.[3] G03C *5/00*
U.S. Cl. 430—306 7 Claims

1. A method of manufacturing a printing plate which comprises the steps of

imagewise exposing a photopolymerisable material layer formed on a layer of base material through a negative of the desired image in which the light transmitting areas are partly covered by a corresponding positive image,

developing the exposed layer to leave a plurality of raised printing areas adapted to receive a film of ink,

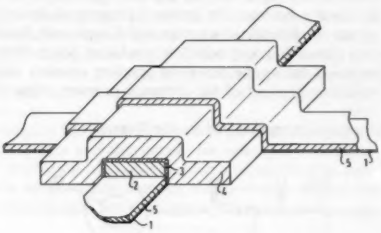
the time and intensity of exposure being such that the upper surface of each area consists of a relatively higher peripheral region and a relatively lower central region.

4,283,485

CONDUCTOR CROSSOVERS FOR INTEGRATED RC-CIRCUITS

Wolf-Dieter Müenz, Freigericht, and Hans W. Pötzlberger, Munich, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed May 21, 1979, Ser. No. 40,703
Claims priority, application Fed. Rep. of Germany, May 31, 1978, 2823881
Int. Cl.[3] C25D *11/02, 11/34;* H05K *3/06*
U.S. Cl. 430—314 6 Claims



1. A method for the manufacture of a conductor crossover formed of a crossover region with a crossunder path and a crossover path and leads connecting to the crossover and crossunder paths, all in a thin film integrated circuit, comprising the steps of:

(a) providing an insulating base and applying a TaAl double layer thereon, the double layer comprising a first bottom TaAl layer of higher tantalum content and a second upper TaAl layer of lower tantalum content;

(b) in a first photo-technique, masking the desired crossunder path and associated leads and also the desired leads for the crossover path, and then etching away unmasked portions of the double layer;

(c) oxidizing the remaining portions of the double layer to create a TaAl-oxide layer;

(d) applying an SiO_2 layer over the structure formed thus far;

(e) in a second photo-technique, masking the desired crossover region and etching off unmasked SiO_2 and TaAl-oxide layers;

(f) using the remaining SiO_2 in the crossover region as a mask, etching off unmasked TaAl second layer from the leads of the crossunder and crossover paths;

(g) applying an electrically highly conductive layer over the structure formed thus far; and

(h) in a third photo-technique, masking the desired crossover path and the leads of the crossover and crossunder paths and etching away unmasked portions of the conductive layer.

4,283,486

SILVER HALIDE COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Toshiaki Aono, and Takeshi Hirose, both of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

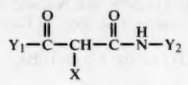
Filed Apr. 30, 1980, Ser. No. 145,090
Claims priority, application Japan, Oct. 2, 1979, 54/126971
Int. Cl.[3] G03C *1/76*
U.S. Cl. 430—505 20 Claims

1. A silver color photographic light-sensitive material comprising:

(a) a paper support;

(b) a color image-forming emulsion layer containing a photographic color coupler which forms a dye on coupling with an oxidized aromatic primary amine, said color image-forming emulsion layer comprising a blue-sensitive

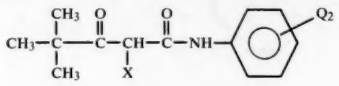
emulsion layer containing a yellow coupler, a green-sensitive emulsion layer containing a magneta coupler, a red-sensitive emulsion layer containing a cyan coupler, wherein said yellow coupler is selected from the group consisting of a coupler represented by the formula (IV)



(IV)

wherein Y_1 represents an aliphatic group, an aromatic group or a heterocyclic group; Y_2 represents an aromatic group or a heterocyclic group; and X represents hydrogen or a cleavable group which is capable of being cleaved as an anion during the oxidation coupling reaction with the oxidation product of the aromatic primary amine developer,

and a coupler represented by the formula (V)



(V)

wherein Q_1 represents halogen, alkoxy, aryloxy, dialkylamino or alkyl; Q_2 is positioned at 4- or 5-position of the anilido nucleus and represents halogen, trifluoromethyl, acylamino, sulfonamido, ureido, alkyl, alkoxy, aryloxy, carboxy, alkoxycarbonyl, carbamoyl, sulfo, sulfamoyl or imido; and X represents hydrogen or a cleavable group which is capable of being cleaved as an anion during the oxidation coupling reaction with the oxidation product of the aromatic primary amine developer;

(c) an oxygen-impermeable layer having an oxygen permeability of not more than 2.0 $ml/m^{2}\cdot\eta\theta\cdot atm$, said oxygen-impermeable layer being located between the paper support and the color image-forming layer; and

(d) a protective layer providing a top surface on the same side of the paper support as the color image-forming layer and the oxygen-impermeable layer, said protective layer containing gelatin as a binder having a thickness of from about 0.4 to 4 μm.

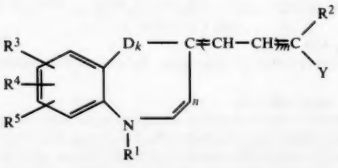
4,283,487

THERMOLABILE ACUTANCE DYES FOR DRY SILVER

Bernard A. Lea, and Ronald W. Burrows, both of Harlow, England, assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Nov. 29, 1979, Ser. No. 98,386
Int. Cl.³ G03C *1/84, 1/02*
U.S. Cl. 430—522 **15 Claims**

1. A light sensitive composition comprising an intimate mixture of a substantially light-insensitive silver compound which upon reduction gives a visible change and sufficient amount of a silver halide to catalyse said reduction to give a visible change in those areas where the silver halide has been exposed to light when the intimate mixture is heated in the presence of a reducing agent, the intimate mixture including as an acutance dye a compound of the general formula:



wherein:

n is 1 when k is 0 or k is 1 when n is 0,

m is 0, 1 or 2,

Y is a member selected from the group consisting of —CN and NO_2,

R^1 represents an alkyl group containing 1 to 12 carbon atoms,

R^2 is a member selected from the group consisting of a phenyl group, a substituted phenyl group of molecular weight less than 350, $—COOR^1$ wherein R^1 is an alkyl group of 1 to 12 carbon atoms, $C_6H_5CO—$ or $R^6NHCO—$ wherein R^6 is a member of the group consisting of a hydrogen atom, alkyl, aryl or aralkyl group, and when m is 1 or 2, R^2 may additionally represent a member of the group consisting of a hydrogen atom and an alkyl group having 1 to 4 carbon atoms,

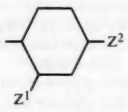
R^3, R^4 and R^5 are cyanine dye compatible substituents,

D represents a member of the group consisting of (CH=CH), O, S, Se, $>C(CH_3)_2$ or $>NR^7$, wherein R^7 is selected from the group consisting of an alkyl group containing 1 to 4 carbon atoms and $CH_3COO—$,

with the proviso that:

when k=0, n=1, m=0 and Y is NO_2

R^2 is not a substituted phenyl group of the formula:



wherein one of Z^1 and Z^2 is NO^2 and the other is a member of the group consisting of a halogen atom, $—NO_2$, —CN and a perfluoroalkyl group containing 1 to 4 carbon atoms.

4,283,488

PHOTOGRAPHIC COMPOSITIONS AND ELEMENTS SPECTRALLY SENSITIZED WITH NEW METHINE DYES

Earl J. VanLare, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 22, 1980, Ser. No. 180,261
Int. Cl.³ G03C *1/02, 1/18, 1/19, 1/22*
U.S. Cl. 430—588 **9 Claims**

7. In a radiation-sensitive silver-halide composition, the improvement wherein said composition is spectrally sensitized by means of a methine dye selected from the group consisting of:

(1) 5,5′,6,6′-tetrachloro-1,1-diethyl-3,3′-bis(3-trimethylsilylpropyl)benzimidazolocarbocyanine iodide;

(2) 5,6-dichloro-1,3′-diethyl-3-(3-trimethylsilylpropyl)benzimidazolooxacarbocyanine iodide;

(3) 5,6-dichloro-1,3′-diethyl-3-(3-trimethylsilylpropyl)benzimidazolothicarbocyanine iodide;

(4) 5,6-dichloro-1,3′-diethyl-3-(3-trimethylsilylpropyl)-4′,5′-benzobenzimidazolothiocarbocyanine iodide;

(5) 5-{[5,6-dichloro-1-ethyl-3-)3-trimethylsilylpropyl)-2-benzimidazolinylidene]ethylidene}-3-ethylrhodanine;

(6) 5-{[5,6-dichloro-1-ethyl-3-(3-trimethylsilylpropyl)-2-benzimidazolinylidene]ethylidene}-3-ethyl-2-thio-2,4-oxazolidinedione;

(7) 3,3′-Bis(3-trimethylsilylpropyl)thiacarbocyanine iodide;

(8) 9-methyl-3,3′-bis(3-trimethylsilylpropyl)thiacarbocyanine iodide;

(9) 9-ethyl-3,3′-bis(3-trimethylsilylpropyl)thiacarbocyanine iodide;

(10) 3,3′-bis(3-trimethylsilylpropyl)thiadicarbocyanine iodide;

(11) 1′-ethyl-3-(3-trimethylsilylpropyl)thia-2′-cyanine iodide;

(12) 3-ethyl-3'-(3-trimethylsilylpropyl)oxathiacarbocyanine iodide;
(13) 3-ethyl-3'-(3-trimethylsilylpropyl)-4,5-benzothiacarbocyanine iodide;
(14) 5-{[3-(3-trimethylsilylpropyl)-2-benzothiazolinylidene]ethylidene}-3-ethylrhodanine;
(15) 2-(3,3-dicyanoallylidene)-3-(3-trimethylsilylpropyl)benzothiazoline;
(16) 3,3'-bis(3-trimethylsilylpropyl)selenacarbocyanine iodide;
(17) 3,3'-bis(3-trimethylsilylpropyl)selenadicarbocyanine iodide;
(18) 1'-ethyl-3-(3-trimethylsilylpropyl)selena-2'-cyanine iodide;
(19) 3-ethyl-3'-(3-trimethylsilylpropyl)oxaselenocarbocyanine iodide; and
(20) 5,6-dichloro-1,3-diethyl-3'-(3-trimethylsilylpropyl)benzimidazoloselenacarbocyanine iodide.

4,283,489

PURIFICATION OF NUCLEOTIDE SEQUENCES SUITABLE FOR EXPRESSION IN BACTERIA

Howard M. Goodman, Seeburg; John Shine, and Peter Horst, both of San Francisco, all of Calif., assignors to The Regents of the University of California, San Francisco, Calif.

Division of Ser. No. 836,218, Sep. 23, 1977, abandoned. This application Nov. 23, 1979, Ser. No. 97,049

Int. Cl.[3] **C12Q** *1/68*

U.S. Cl. 435—6 **5 Claims**

1. A method for measuring the purity of a specific desired nucleotide sequence in a preparation of DNA fragments of essentially homogeneous length containing said nucleotide sequence, there being at least one restriction site within the specific desired nucleotide sequence, comprising the steps of:
a. subjecting the DNA preparation to the action of a restriction endonuclease capable of catalyzing the hydrolysis of the specific desired nucleotide sequence at the restriction site within the sequence, in order to produce identifiable sub-fragments thereof,
b. separating the restriction endonuclease treated DNA sub-fragments according to their length, and
c. measuring the amount of the DNA preparation identifiable as sub-fragments of the specific desired nucleotide sequence, compared to the total amount of DNA, thereby measuring the purity of the specific desired nucleotide sequence.

4,283,490

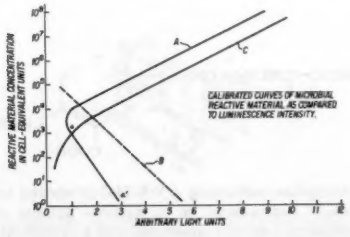
METHOD FOR DETECTION OF LOW LEVEL BACTERIAL CONCENTRATION BY LUMINESCENCE

Chris J. Plakas, 8510 Conover Pl., Alexandria, Va. 22308

Continuation-in-part of Ser. No. 928,869, Jul. 28, 1978, abandoned, which is a continuation of Ser. No. 764,180, Jan. 31, 1977, Pat. No. 4,144,134. This application Oct. 11, 1979, Ser. No. 83,758

Int. Cl.[3] **C12Q** *1/6*

U.S. Cl. 435—8 **3 Claims**



1. An improvement on a method of detecting the presence of microbial luminescent reactive molecules in a sample wherein the concentration of said molecules is so low as to have the luminescent reaction due to said molecules masked by extraneous luminescent reactions of the reagents themselves, the method comprising the steps of:
(A) placing said sample, wherein the concentration of said molecules is so low as to have the luminescent reaction due to said molecules masked by extraneous luminescent reactions of the reagents themselves, in a designated reactive location,
(B) situating an optical detector means adjacent the reactive location for detecting photon emission from the sample,
(C) adding a reagent to the sample in an amount exceeding the minimum necessary to cause luminescence of all the luminescent reactive molecules in the sample, and
(D) observing the strength of luminescence during the reaction between the sample and reagent with the aid of the optical detector means, the improvement comprising the step of:
positioning an optical filter means between the optical detector means and the sample for selectively restricting the wavelength of photons which are permitted to pass from the sample to the detector means to those photons having a wavelength less than about 400 nanometers.

4,283,491

ANALYTICAL ELEMENTS WITH IMPROVED REAGENT STABILITY

Glen M. Dappen, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 831,204, Sep. 6, 1977, abandoned. This application Aug. 20, 1979, Ser. No. 67,843

Int. Cl.[3] **C12Q** *1/62, 1/54, 1/28;* **C12N** *9/96*

U.S. Cl. 435—10 **30 Claims**

1. In an element for the analysis of a predetermined analyte in an aqueous liquid, said element comprising:
(a) a carrier permeable to said aqueous liquid and to said predetermined analyte and,
(b) dispersed in said carrier, reagents capable of interacting with or facilitating interaction with said predetermined analyte or its reaction products to yield a detectable product, one of said reagents comprising peroxidase, the improvement comprising having dispersed in said carrier in addition to said reagents a polymer in an amount sufficient to impart stability to said peroxidase, said amount comprising from about 20 percent to about 50 percent of the total weight of said carrier material plus said polymer, said polymer comprising:
(1) from about 80 to about 98 percent by weight of recurring units derived from one or more hydrophobic, addition-polymerizable monomers selected from the group consisting of an alkyl acrylate, an alkyl methacrylate, styrene and a substituted styrene,
(2) from about 1 to about 20 percent by weight of recurring units derived from one or more anionic monomers selected from the group consisting of an acrylic acid, an acrylic acid salt, a methacrylic acid, a methacrylic acid salt, a sulfonic acid, a sulfonic acid salt, a sulfonate, a sulfate, a phosphate and a phosphorate, and
(3) from 0 to about 15 percent by weight of recurring units derived from one or more crosslinkable, active methylene group-containing monomers.

8. In an element for the analysis of a predetermined analyte in an aqueous liquid, said element comprising:
(a) a carrier permeable to said aqueous liquid and to said predetermined analyte and
(b) dispersed in said carrier, reagents capable of interacting with or facilitating interaction with said predetermined analyte or its reaction products to yield a detectable product, one of said reagents comprising peroxidase,
the improvement comprising having dispersed in said carrier in addition to said reagents a polymer comprising:
(1) from about 80 to about 98 percent by weight of recurring

units derived from one or more hydrophobic, addition-polymerizable monomers selected from the group consisting of an alkyl acrylate, an alkyl methacrylate, styrene, and a substituted styrene,

(2) from about 1 to about 20 percent by weight of recurring units derived from one or more anionic monomers selected from the group consisting of an acrylic acid, an acrylic acid salt, a methyacrylic acid, a methyacrylic acid salt, a sulfonic acid, a sulfonic acid salt, a sulfonate, a sulfate, a phosphate, and a phosphorate, and

(3) from 0 to about 15 percent by weight of recurring units derived from one or more crosslinkable, active methylene group-containing monomers,

said polymer comprising from about 20 percent to about 50 percent of the total weight of said carrier plus said polymer.

16. In an element for the analysis of a predetermined analyte in an aqueous liquid, said element comprising:

(a) a carrier permeable to said aqueous liquid and to said predetermined analyte and

(b) dispersed in said carrier, reagents capable of interacting with or facilitating interaction with said predetermined analyte or its reaction products to yield a detectable product, one of said reagents comprising peroxidase,

the improvement comprising having dispersed in said carrier in addition to said reagents a polymer selected from the group consisting of

Poly(methyl acrylate-co-3-acryloyloxypropane=sulfonic acid, sodium salt-co-2-acetoacetoxyethyl methacrylate) (weight ratio 88.75:4.75:6.5);

Poly(methyl acrylate-co-2-acrylamido-2-methyl=propanesulfonic acid-co-2-acetoacetoxyethyl methacrylate) (weight ratio 88.75:4.75:6.5);

Poly(methyl acrylate-co-2-acrylamido-2-methyl=propanesulfonic acid-co-2-acetoacetoxyethyl methacrylate) (weight ratio=85:10:5);

Poly(n-butyl acrylate-co-3-acryloyloxypropane=sulfonic acid, sodium salt-co-2-acetoacetoxyethyl methacrylate) (weight ratio 91.25:4.75:4.0); and

Poly(n-butyl acrylate-co-2-acrylamido-2-methylpropane sulfonic acid-co-2-acetoacetoxyethyl methacrylate) (weight ratio 85:10:5),

said polymer comprising from about 20 percent to about 50 percent of the total weight of said carrier plus said polymer.

27. In an element for the analysis of uric acid in aqueous liquids, said element comprising:

(a) a carrier permeable to said aqueous liquid and to uric acid and,

(b) dispersed in said carrier, reagents comprising bis(vinylsulfonylmethyl)ether, uricase, peroxidase, a dispersion of 2-(3,5-dimethoxy-4-hydroxyphenyl)-4,5-bis-(4-dimethylaminophenyl)imidazole in 2,4-di-n-pentylphenol, and a borate buffer (pH 9),

the improvement comprising having dispersed in said carrier in addition to said reagents a polymer in an amount sufficient to impart stability to said peroxidase, said amount comprising from about 20 percent to about 50 percent of the total weight of said carrier material plus said polymer, said polymer being selected from the group consisting of:

poly(methyl acrylate-co-3-acryloxyloxypropane=sulfonic acid, sodium salt-co-2-acetoacetoxyethyl methacrylate) (weight ratio 88.75:4.75:6.5);

poly(methyl acrylate-co-2-acrylamido-2-methyl=propanesulfonic acid-co-2-acetoacetoxyethyl methacrylate) (weight ratio 88.75:4.75:6.5);

poly(methyl acrylate-co-2-acrylamido-2-methyl=propanesulfonic acid-co-2-acetoacetoxyethyl methacrylate) (weight ratio 85:10:5);

poly(n-butyl acrylate-co-3-acryloyloxypropane=sulfonic acid, sodium salt-co-2-acetoacetoxyethyl methacrylate) (weight ratio 91.25:4.75:4.0); and

poly(n-butyl acrylate-co-2-acrylamido-2-methylpropane sulfonic acid-co-2-acetoacetoxyethyl methacrylate) (weight ratio 85:10:5).

4,283,492

PRODUCTION OF ANTIBIOTICS WS-3442 A, B, C, D AND E, AND THEIR ACYL DERIVATIVES

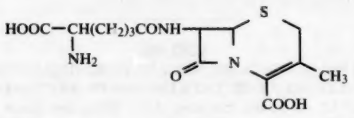
Hiroshi Imanaka; Junzi Hosoda, both of Ikeda; Kazuyoshi Jomon, Kawanishi; Heiichi Sakai, Ikeda; Ikuo Ueda, Yao, and Daizou Morino, Hatsutoriyutakamachi, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

Division of Ser. No. 371,989, Jun. 21, 1975, abandoned. This application Jun. 13, 1978, Ser. No. 915,215

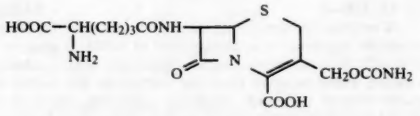
Int. Cl.[2] **C12D** *9/14*

U.S. Cl. 435—47 **9 Claims**

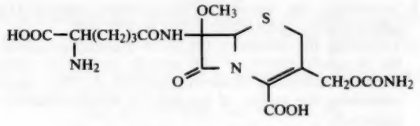
1. A process for the production of antibiotic WS-3442 selected from the group of WS-3442 A, B, C, D and E in which WS-3442 A has following chemical structure:



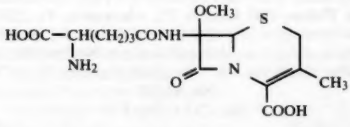
WS-3442 B has following chemical structure:



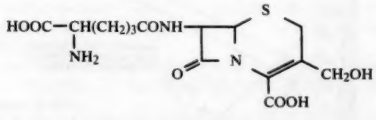
WS-3442 C has following chemical structure:



WS-3442 D has following chemical structure:



WS-3442 E has following chemical structure:



which comprises cultivating a WS-3442-producing strain of *Streptomyces wadayamensis* in an aqueous nutrient medium under submerged aerobic conditions until a substantial antibiotic activity is imparted to said medium by the production of the WS-3442 and recovering the WS-3442.

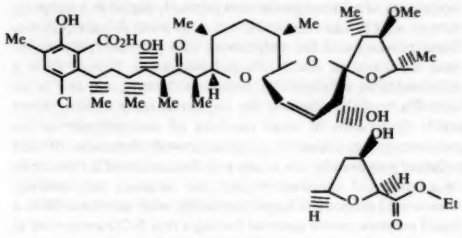
4,283,493

PROCESS OF PRODUCING ANTIBIOTIC X-14766A BY A STREPTOMYCES

Chao-Min Liu, and John Westley, both of Cedar Grove, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 944,825, Sep. 22, 1978, Pat. No. 4,221,724. This application Mar. 10, 1980, Ser. No. 128,992
Int. Cl.[3] C12P *17/18*
U.S. Cl. 435—119 1 Claim

1. A process to produce a compound of the formula



which comprises:

cultivating a strain of Streptomyces X-14766A, NRRL 11335 in an aqueous carbohydrate solution containing a nitrogenous nutrient under submerged aerobic conditions and thereafter isolating the X-14766A antibiotic from said solution.

4,283,494

MICROBIAL LIPASE, PROCESS FOR ITS PREPARATION AND MICROBIOLOGICALLY PURE CULTURE THEREFOR

Yoshitaka Kokusho, Kunitachi; Haruo Machida, and Shinjiro Iwasaki, both of Hino, all of Japan, assignors to Meito Sangyo Kabushiki Kaisha, Japan

Filed Apr. 26, 1978, Ser. No. 900,234
Int. Cl.[3] C12N *9/20, 1/20;* C12R *1/05*
U.S. Cl. 435—198 11 Claims

1. A microbial lipase which has

(i) an optimal pH for activity of about 9±0.5,

(ii) an optimal temperature for activity of about 40° C. to about 48° C.,

(iii) a lipase activity to be activated by bile salts,

(iv) a cholesterol esterase activity, and

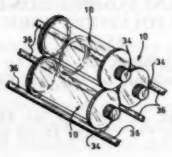
(v) a molecular weight of about 30×10^4 to about 40×10^4.

4,283,495

ROLLER BOTTLE

Robert W. Lynn, Oxnard, Calif., assignor to Becton, Dickinson and Company, Paramus, N.J.

Division of Ser. No. 949,450, Oct. 10, 1978, Pat. No. 4,238,568. This application Feb. 25, 1980, Ser. No. 123,957
Int. Cl.[3] C12N *5/00*
U.S. Cl. 435—240 3 Claims



1. A method for culturing cells within a roller bottle having an interior surface adapted for cell adhesion and an exterior surface including at least one serrated portion along its circumference comprising the steps of contacting said serrated portion with rollers of a roller apparatus and rotating said rollers whereby the bottle rotates without slipping.

4,283,496

PREPARATION AND USE OF GLUCOSE ISOMERASE

Chin K. Lee, Winston-Salem, N.C., assignor to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.

Continuation-in-part of Ser. No. 734,222, Oct. 20, 1976, Pat. No. 4,061,539. This application Sep. 19, 1977, Ser. No. 834,073
Int. Cl.[3] C12N *1/20;* C12P *19/24*
U.S. Cl. 435—253 3 Claims

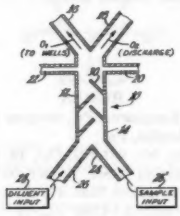
1. A biologically pure culture of a mutant strain of the microorganism *Flavobacterium arborescens* having the identifying characteristics of *Flavobacterium arborescens* ATCC 4358, said strain being capable of producing substantial quantities of glucose isomerase activity when cultivated in a nutrient medium containing sources of carbon, nitrogen and inorganic salts with lactose as the sole carbon source.

4,283,497

MICROBIOLOGICAL SYSTEMS

Yashar Hirshaut, Lawrence, N.Y., assignor to Samson Helfgott and Jack W. Benjamin, both of New York, N.Y., part interest to each

Filed Jan. 24, 1979, Ser. No. 6,005
Int. Cl.[3] C12M *1/36*
U.S. Cl. 435—289 13 Claims



1. A microbiological mixing and dilution device comprising, at least one fluid amplifier having a control chamber, a first inlet port for feeding a microbiological fluid sample from a source of supply into said control chamber, a second inlet port for feeding a fluid diluent from another source of supply into said control chamber wherein the fluid sample and the fluid diluent are mixed, two fluid outlet ports for selectively discharging the contents of said control chamber, said control chamber serving as a mixing chamber to dilute the sample and control port means fluidly coupled to said control chamber for utilizing a suitable control fluid to direct at least a portion of the diluted sample to a selected outlet port, and distribution means for receiving the diluted sample from said selected outlet port for microbiological use.

4,283,498

BIOLOGICAL SPECIMEN COLLECTION AND TRANSPORT SYSTEM

Joseph D. Schlesinger, 1013 Sunset Pl., Ojai, Calif. 93023

Filed Oct. 29, 1979, Ser. No. 89,603
Int. Cl.[3] C12M *1/24*
U.S. Cl. 435—296 33 Claims

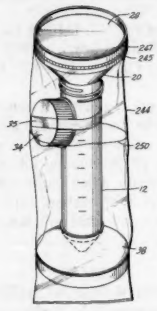
1. A biological specimen collection and transport apparatus which comprises:

(a) an elongated hollow specimen receptacle having a closed bottom end and an open top end;

(b) detachable conduit means for introducing a biological specimen into the hollow specimen receptacle mounted on the open end of the hollow specimen receptacle;

(c) base means for receiving the closed bottom end of the elongated hollow specimen receptacle for supporting said elongated hollow specimen receptacle in a vertical position;

(d) a flexible outer protective covering enclosing the outer surface of the elongated hollow specimen receptacle for



preventing contamination of the outer surface of said elongated hollow specimen receptacle by a biological specimen during introduction of the biological specimen into said elongated hollow specimen receptacle; and

(e) means for attaching the flexible outer protective covering to the detachable conduit means.

4,283,499

RESINS

Thomas J. Howell, Langhorne, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Continuation of Ser. No. 951,102, Oct. 13, 1978, abandoned, which is a continuation of Ser. No. 809,957, Jun. 27, 1977, abandoned. This application Mar. 17, 1980, Ser. No. 130,923

Int. Cl.[3] **C08F** *212/36*

U.S. Cl. 521—38 **11 Claims**

1. In the process of preparing hard, crosslinked discrete ion exchange copolymer beads by the thermally induced free-radical polymerization in an aqueous dispersion of a monomer mixture comprised of a major proportion of a monovinyl aromatic monomer and a minor proportion of a crosslinking monomer having at least two active vinyl groups, the improvement which comprises conducting the polymerization reaction in the presence of a peroxy catalyst of the formula:

$$(R_1{-}\overset{\overset{O}{\|}}{C}{-}O{-}O)_xR_2$$

wherein R_1 is a branched alkyl of 3 to 12 carbon atoms and having a secondary or tertiary carbon linked to the carbonyl group and X is a positive integer having a value of either 1 or 2 and when X is 1, R_2 is a branched alkyl radical containing a tertiary carbon attached to the oxygen, and when X is 2, R_2 is an alkylene or aralkylene, in either case terminating in tertiary carbons attached to the oxygen, or of the formula:

$$Y\,OC{-}O{-}O{-}\overset{\overset{O}{\|}}{C}O{-}Z$$

wherein Y and Z are independently selected from lower alkyl, cycloalkyl, alkyl-substituted cycloalkyl and aralkyl, and thereafter functionalizing the copolymer bead to form ion exchange sites therein.

4,283,500

POLYMER/POLYISOCYANATES

George H. Armstrong; Richard M. Gerkin, both of Charleston, and Frank E. Critchfield, South Charleston, all of W. Va., assignors to Union Carbide Corporation, New York, N.Y.

Filed Mar. 31, 1980, Ser. No. 135,397

Int. Cl.[3] **C08G** *18/14*

U.S. Cl. 521—137 **47 Claims**

1. In a polymer/polyisocyanate composition which is convertible by reaction with a poly(active hydrogen) organic compound to form a polyurethane product wherein the polyisocyanate of said composition is normally liquid at a temperature at which said composition is converted to said polyurethane product and the polymer of said polymer/polyisocyanate is formed in situ in the polyisocyanate thereof from a polymerizable ethylenically unsaturated monomer and is essentially insoluble therein, the improvement providing more stable dispersions of small particles of said polymer in the polyisocyanate, comprising, an improved dispersion of said polymer prepared by the in situ polymerization of acrylonitrile or mixtures of acrylonitrile and one or more ethylenically unsaturated monomers copolymerizable with acrylonitrile in a liquid polyisocyanate material having a free NCO content of at least 10 wt. % consisting essentially of (1) polymeric forms of a diarylalkylene diisocyanate having the formula:

$$H{-}\left[\begin{array}{c}NCO\\|\\R{-}CH_2\end{array}\right]_x\begin{array}{c}NCO\\|\\R\end{array}{-}H$$

in which R is a trivalent aromatic group and x is a number having an average value of 1.1 to 5, (2) mixtures of a diarylalkylene diisocyanate, a carbodiimide of the formula: $OCNR'N{=}C{=}NR'NCO$ and a diarylalkylene diisocyanate trifunctional trimeric cycloadduct of the formula:

$$\begin{array}{l}OCNR'N{-}C{=}NR'NCO\\\quad\quad\;|\quad\;|\\\quad O{=}C{-}NR'NCO\end{array}$$

wherein R' is a divalent arylenealkylenearylene group, or (3) mixtures of polyisocyanates (1) and (2) above, said ethylenically unsaturated monomer(s) in an effective amount improving the affinity of the resulting polymer particles for said polyisocyanate and restricting agglomeration of said polymer particles in said polyisocyanate to provide a dispersion which forms films containing less than 10% seeds, the remaining area being glossy, or 5% seeds, the remaining area being semi-glossy, said percentages being on an area basis.

4,283,501

FIRE-RETARDANT COMPOSITION CONTAINING DERIVATIVES OF POLYPHOSPHORIC ACID PARTIAL ESTERS

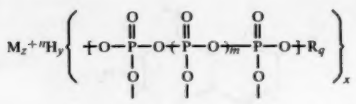
Thomas P. Brady, Holliston, and Horst G. Langer, Wayland, both of Mass., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jan. 28, 1980, Ser. No. 116,120

Int. Cl.[3] **C08K** *5/52;* **D06M** *13/26;* **B32B** *13/10*

U.S. Cl. 525—2 **22 Claims**

1. A composition of matter comprising a cellulosic material rendered resistant to fire by addition thereto of a fire-retarding amount of one or more derivatives of polyphosphoric acid partial esters of the formula



wherein,

R is each occurrence the remnant of phenol, halophenol or a C_{1-20} aliphatic or halogenated aliphatic monohydroxyl compound formed by removal of the hydroxyl group;

M is independently each occurrence a cationic species selected from ammonium, substituted ammonium, and mono-, di-, tri- and tetravalent alkali metal, alkaline earth metal, transition metal and group 3a metal cations of the periodic table;

m is an integer from zero to three; y is an integer equal to or greater than zero; and q, x and z are all integers greater than or equal to one selected such that $(zn)+y=x(m+4-q)$ and $q \leqq m+3$.

4,283,502

POLYAMIDE RESINS

Paul N. Richardson, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 34,605, Apr. 30, 1979, abandoned, which is a continuation-in-part of Ser. No. 945,323, Sep. 25, 1978, abandoned. This application Apr. 7, 1980, Ser. No. 138,249

Int. Cl.³ C08L *77/00*

U.S. Cl. 525—66 **8 Claims**

1. A melt compounded blend consisting essentially of

(a) a polyamide resin having a molecular weight of at least 5000, and

(b) an adduct of maleic or fumaric anhydride and a copolymer of ethylene, at least one C_3 to C_6 α-olefin, and at least one nonconjugated diene, said adduct having an anhydride functionality of between about 0.1 and 4.0 milliequivalents of carboxyl groups per 1 gram of adduct, said adduct being present in the blend in an amount such that the anhydride functionality comprises between about 0.7 and 10 equivalents per 10^6 g of polyamide present; provided that the maximum amount of adduct present is less than 1 percent based on weight of polyamide and adduct; and provided that the adduct is in the form of finely divided particles having an average size less than 0.5 micron.

4,283,503

POLYPHENYLENE OXIDE BLENDING

Roy F. Wright, Bartlesville, Okla., assignor to Phillips Petroleum Co., Bartlesville, Okla.

Filed Dec. 10, 1979, Ser. No. 101,669

Int. Cl.³ C08L *71/04*

U.S. Cl. 525—89 **5 Claims**

1. A process for blending polyphenylene oxide and a conjugated diene polymer comprising mechanically blending two components (a) and (b) namely

(a) a dry initial mixture of polyphenylene oxide and a first conjugated diene polymer, which mixture has been obtained by solution blending polyphenylene oxide and said first conjugated diene polymer, and

(b) a second conjugated diene polymer

to form a final mixture of polyphenylene oxide and conjugated diene polymer, wherein said first and said second conjugated diene polymers can be the same or different.

4,283,504

CROSSLINKABLE POLYMERS CONTAINING ACRYLAMIDOPHENOL UNITS

Gerald A. Campbell, Webster; Kenneth R. Hollister, Pittsford, and Richard C. Sutton, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

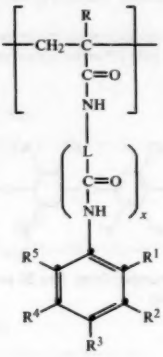
Division of Ser. No. 893,557, Apr. 4, 1978, Pat. No. 4,207,109. This application Oct. 11, 1979, Ser. No. 83,742

Int. Cl.³ C08F *22/38, 122/38, 212/04, 220/58*

U.S. Cl. 525—261 **10 Claims**

1. A crosslinked addition copolymer formed by crosslinking a copolymer comprising:

A. from about 0.5 to 50 percent by weight of a unit having the formula



wherein:

x is 1 or 0,

R represents hydrogen or methyl,

L is alkylene and cycloalkylene having from 1 to 6 carbon atoms or arylene having from 6 to 10 carbon atoms, and

R^1 through R^5 are independently selected from the group consisting of hydrogen, hydroxy, alkyl from 1 to 6 carbon atoms and aryl from 6 to 10 carbon atoms; with the proviso that at least one of R^1 through R^5 is hydroxy and at least one of the positions ortho or para to said hydroxy has a hydrogen atom attached thereto; and

B. from about 50 to 99.5 percent by weight of units of at least one additional polymerized ethylenically unsaturated monomer;

with 0.1 to 25 percent by weight based on the total weight of the uncrosslinked polymer of a gelatin crosslinking agent.

4,283,505

METHOD FOR CROSS-LINKING AND STABILIZING POLYMERS WHICH CAN BE CROSS-LINKED RADICALLY

Wolfgang Kleeberg; Wolfgang Rogler; Wolfgang V. Gentzkow, all of Erlangen, and Roland Rubner, Röttenbach, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed May 18, 1979, Ser. No. 40,469

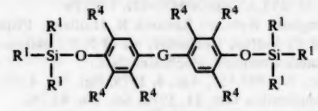
Claims priority, application Fed. Rep. of Germany, May 31, 1978, 2823820

Int. Cl.³ C08F *287/00, 265/04, 255/02, 255/06*

U.S. Cl. 525—281 **5 Claims**

1. In a method for cross-linking radically cross-linkable saturated hydrocarbon polymer systems and for stabilizing such polymer systems against oxidative and/or thermal decomposition, the improvement comprising carrying out the cross-linking of the polymer systems in the presence of oxidation inhibitors selected from the group consisting of compounds represented by the following formulae:

(a)

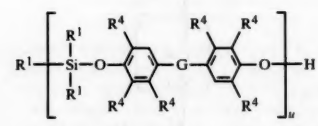


wherein G is selected from n-alkylene or iso-alkylene having 1 to 5 C-atoms, O and S;

at least one R^1 at each Si-atom is alkenyl with 2 to 3 C-atoms and, for any remaining positions, R^1 is selected from cycloalkyl, aryloxy, aralkyloxy having 7 to 11 C-atoms, cycloalkyloxy, alkyl with 1 to 3 C-atoms, phenyl, alkyloxy with 1 to 3 C-atoms, methoxyethoxy and ethoxyethoxy; and

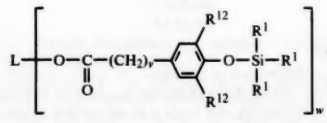
R^4 is selected from hydrogen, n- or iso-alkyl with 1 to 5 C-atoms or the two R^4 ortho substituents together can be benzo;

(b)



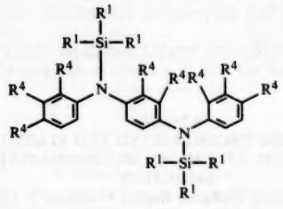
wherein u is a number from 1 to 20 and R^1, R^4 and G are as defined above;

(c)



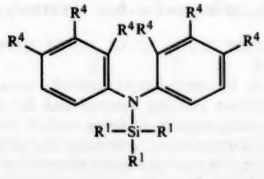
wherein v=0 to 2 and w=1 to 6, R^1 is as defined above, R^{12} is n- or iso-alkyl with 1 to 5 C-atoms and L is a w-times substituted n- or isoalkyl radical with 1 to 6 C-atoms;

(d)



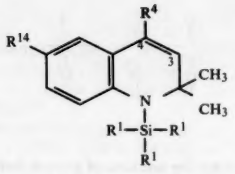
wherein R^1 and R^4 are as defined above;

(e)



wherein R^1 and R^4 are as defined above;

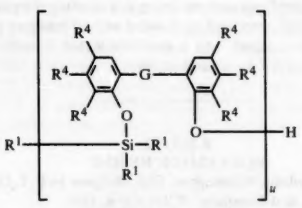
(f)



wherein R^1 and R^4 are as defined above; R^{14} is selected from hydrogen, n- or isoalkyl with 1 to 12 C-atoms and n- or isoalkyloxy with 1 to 12 C-atoms;

(g) compounds formed by oligimerizing the compounds of (f) via the C=C double bond at atoms C^3 and C^4 and

(h)



wherein R^1, R^4, G and u are as defined above.

4,283,506

PROCESS FOR PREPARING RUBBER REINFORCED STYRENIC RESINS

William J. I. Bracke, Hamme, and Emmanuel Lanza, Brussels, both of Belgium, assignors to Labofina, S.A., Brussels, Belgium

Filed Mar. 27, 1980, Ser. No. 134,473

Int. Cl.³ C08L *27/00*

U.S. Cl. 525—309 **28 Claims**

1. A process for the continuous production of rubber reinforced styrenic resins of the ABSA-type which are composites of styrenic compound-acrylonitrile copolymers and rubbery polymers of acrylate esters crosslinked by a diolefinic compound, said process comprising the steps of:

(a) adding a monomer material selected from the group consisting of alkyl ester of acrylic acid, alkyl ester of methacrylic acid and mixtures thereof together with a part of the diolefinic compound to a first solution of a copolymeric matrix of a styrenic compound and acrylonitrile in an inert solvent, whereby there is formed a second solution of said monomer material and said matrix in the inert solvent,

(b) charging continuously said second solution into a first polymerization reactor and subjecting said second solution to mass polymerization conditions to polymerize a part of said monomer material,

(c) withdrawing continuously a prepolymer mixture from said first reactor,

(d) charging continuously said mixture into a second polymerization reactor and subjecting said mixture to a further mass polymerization in the presence of the rest of the diolefinic compound whereby there is formed in situ a crosslinked rubbery material that is dispersed into said copolymer matrix,

(e) withdrawing continuously a reaction mixture from said second reactor and subjecting said mixture to a heat treatment to remove the solvent and the residual monomers, and

(f) recovering the ABSA resin.

4,283,507

HYDROLYSIS OF ACRYLAMIDE POLYMERS

Kenneth G. Phillips, River Forest, and Mary E. Bingham, Palos Hills, both of Ill., assignors to Nalco Chemical Company, Oak Brook, Ill.

Filed Feb. 25, 1980, Ser. No. 124,615
Int. Cl.³ C08F *8/34, 8/42, 8/44*
U.S. Cl. 525—344 **3 Claims**

1. A method of enhancing hydrolysis of an acrylamide polymer contained in a latex, employing either sodium hydroxide or sodium sulfite as a hydrolyzing agent for imparting anionic character to the polymer, comprising:

(a) incorporating a mixture of the latex and hydrolyzing agent in a reaction vessel having a vapor space above the mixture; and

(b) reacting the mixture at about 125° C. while maintaining a pressure in the vapor space sufficient to suppress boiling, for a time sufficient to convert amide groups to anionic character.

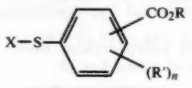
4,283,508

FRAGRANT PREVULCANIZATION INHIBITORS

Otto W. Maender, Copley, Ohio, assignor to Monsanto Company, St. Louis, Mo.

Filed May 22, 1980, Ser. No. 152,279
Int. Cl.³ C08F *8/34*
U.S. Cl. 525—351 **13 Claims**

1. A vulcanizable composition comprising sulfur-vulcanizable rubber, sulfur-vulcanizing agent, organic accelerating agent and, in an amount effect to inhibit premature vulcanization, a compound of the formula:



in which X is an amide inhibitor moiety, R is alkyl of 1–8 carbon atoms, R′ is alkyl of 1–8 carbon atoms, alkoxy of 1–8 carbon atoms, —CO_2—R, or halo, and n is 0, 1 or 2.

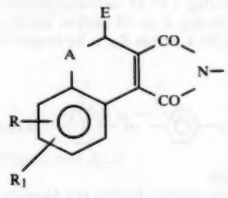
4,283,509

PHOTOCROSSLINKABLE POLYMERS WITH SIDE TRICYCLIC IMIDYL GROUPS

Hans Zweifel, Basel, and Daniel Bellus, Riehen, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Feb. 6, 1979, Ser. No. 9,984
Claims priority, application Switzerland, Feb. 8, 1978, 1401/78
Int. Cl.³ C08F *8/30*
U.S. Cl. 525—375 **5 Claims**

1. A photo-crosslinkable polymer, which has an average molecular weight between 1,000 and 1,000,000, as measured by inherent viscosity on a 0.5% by weight solution in N,N-dimethylformamide or chloroform, and which has side imidyl groups of the formula (I)

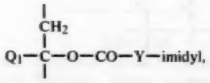


(I)

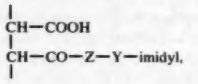
in which R and R_1 independently of one another are hydrogen, halogen, alkyl having 1–4 C atoms or methoxy, A is —CH_2—, —CH_2CH_2— or —OCH_2— with the oxygen atom bonded to the aromatic ring and E is hydrogen, or A is —O— and E is —CH_3, the proportion of imidyl groups of the formula (I) being at least 5 percent, based on the number of recurring structural elements in the polymer, said polymer being a homopolymer or copolymer derived from monomers containing reactive C=C double bonds, wherein said polymer comprises

(a) from 5 to 100 percent, based on recurring structural elements in the polymer chain, of molecular chain members selected from the group consisting of formulas (IV), (VI), (VII) and (X) to (XIV).

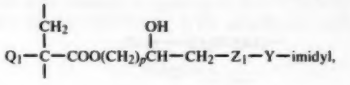
(IV)



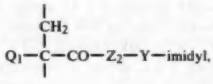
(VI)



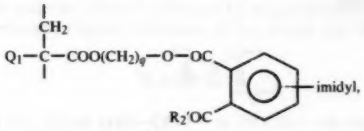
(VII)



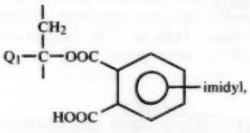
(X)



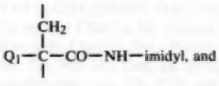
(XI)



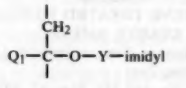
(XII)



(XIII)



(XIV)



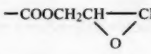
in which imidyl is a radical of the formula (I), Y is alkylene having 1–30 C atoms, or is interrupted by hetero-atoms, or is cycloalkylene having 5 or 6 C atoms, a dicyclohexylmethane radical, arylene having 6–10 C atoms, or aralkylene or alkylarylene having 7 or 8 C atoms, or said radicals Y being substituted, and Q_1 is hydrogen or methyl, R_2' is —OH or —O^-M^+, M^+ is an alkali metal cation, a pyridinium cation or a trialkylammonium cation having 3–24 C atoms, p is the number 1 or 2, q is an integer from 2 to 4, Z is —O—, —NH—,

having 1-4 C atoms or —S—, Z_1 is —OCO—, —NH—, —N—alkyl having 1-4 C atoms, —O— or —S— and Z_2 is —O—, —S— or —NH—, and

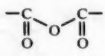
(b) from 95 to 0 percent, based on recurring structural elements in the polymer chain, of structural elements of the formula (XVI)

(XVI)

in which X_1 and X_3 are each hydrogen, X_2 is hydrogen, chlorine or methyl and X_4 is hydrogen, methyl, chlorine, —CN, —COOH, —$CONH_2$, phenyl, methylphenyl, methoxyphenyl, cyclohexyl, pyridyl, imidazolyl, pyrrolidyl, —COO—alkyl having 1-12 C atoms in the alkyl moiety, —COO—phenyl,



—COO—alkyl—OH having 1-3 C atoms in the alkyl moiety, —OCO—alkyl having 1-4 C atoms in the alkyl, —OCO—phenyl, —CO—alkyl having 1-3 C atoms in the alkyl,alkoxy having 1-6 C atoms or phenoxy, or X_1 and X_2 are each hydrogen and X_3 and X_4 together are the grouping



or each are —COOH or —COO—alkyl having 1-6 C atoms in the alkyl.

4,283,510

POLYCHLOROPRENE TREATED WITH ALKYLATED DIARYL AMINE

Nathan L. Turner, Houston, Tex., assignor to Denka Chemical Corporation, Houston, Tex.

Continuation of Ser. No. 144,277, May 17, 1971, abandoned. This application May 6, 1975, Ser. No. 575,110

Int. Cl.[3] C08C *3/00*; C08F *2/26*

U.S. Cl. 525—379 **10 Claims**

1. In a process for preparing polymers of chloroprene by emulsion polymerization using from about 0.05 to 2.0 parts by weight per 100 parts of polymerizable monomers of an octyl sulfate emulsifying agent selected from the group consisting of alkali metal octyl sulfates, ammonium octyl sulfates and mixtures thereof and washing of the resultant polymer with water to remove soluble emulsifying agents, the improvement comprising using as a stabilizer an alkylated diaryl amine.

4,283,511

METHOD FOR PRODUCING MODIFIED POLYPHENYLENE OXIDES

Katsuji Ueno, Hirakata, and Takashi Maruyama, Toyonaka, both of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

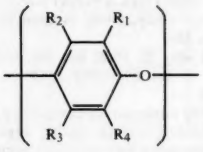
Filed Mar. 31, 1980, Ser. No. 135,236

Claims priority, application Japan, Apr. 12, 1979, 54/45093

Int. Cl.[3] C08F *283/08*

U.S. Cl. 525—392 **14 Claims**

1. A method for producing a modified polyphenylene oxide which comprises polymerizing 69 to 25 parts by weight of a mixture of 97 to 45% by weight of a styrene monomer and 3 to 55% by weight of a polar vinyl monomer at 90° to 190° C. using 0.3 to 10 parts by weight of a radical initiator in an aqueous dispersion containing a dispersion stabilizer alone or in combination with at least one of a surfactant and an adhesion-preventing agent in the presence of 31 to 75 parts by weight of a polyphenylene oxide having a unit structure of the formula,



wherein R_1, R_2, R_3 and R_4 are each a hydrogen or halogen atom, or a hydrocarbon, substituted hydrocarbon, cyano, hydrocarbonoxy, substituted hydrocarbonoxy, nitro or amino group.

14. A modified polyphenylene oxide prepared by the method of anyone of claims **1** to **12**.

4,283,512

COPOLYMER HAVING PEROXY BONDS IN THE MOLECULE THEREOF AND A PROCESS FOR PRODUCING THE SAME

Masaru Matsushima, Aichi, Japan; Takeshi Komai, Lawrence, Kans., and Masaharu Nakayama, Nagoya, Japan, assignors to Nippon Oil and Fats Co., Ltd., Tokyo, Japan

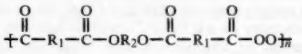
Filed Nov. 27, 1979, Ser. No. 97,627

Claims priority, application Japan, Nov. 30, 1978, 53/148436

Int. Cl.[3] C08F *283/02*

U.S. Cl. 525—438 **6 Claims**

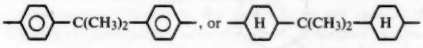
1. A copolymer having peroxy bonds in the molecule thereof, which copolymer is prepared by copolymerizing a diacyl type polymeric peroxide having the formula



wherein

R_1 is alkylene having 1 to 15 carbon atoms or phenylene,

R_2 is alkylene having 2 to 10 carbon atoms, —$(CHR_3$,$CH_2O)_l$$CHR_3$,$CH_2$ wherein R_3, is hydrogen or methyl and l is 1 to 10,



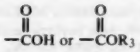
and n is 2 to 10

with one or more monomers having the formula

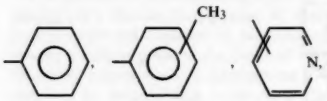
$$CHX_1{=}CX_2X_3$$

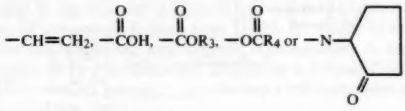
wherein

X_1 is hydrogen,



X_2 is hydrogen, $-CH_3$, $-Cl$ or $-CN$,
X_3 is $-Cl$, $-CN$,





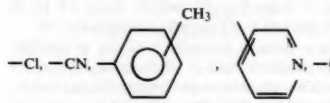
or

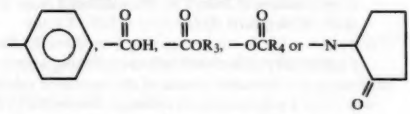
X_1 and X_3 together define

in which R_3 and R_4 are alkyl having 1 to 18 carbon atoms or substituted alkyl having 1 to 18 carbon atoms

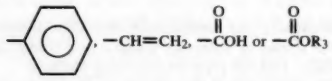
with the provisos that

(1) when X_1 and X_2 are both hydrogen, X_3 is



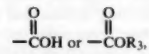


(2) when X_1 is hydrogen and X_2 is $-CH_3$, X_3 is

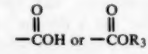


(3) when X_1 is hydrogen and X_2 is $-Cl$ or $-CN$, X_3 is $-Cl$, $-CN$ or $-CH=CH_2$

(4) when X_1 is



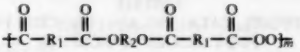
X_2 is hydrogen, and X_3 is



(5) when X_1 and X_3 together define

X_2 is hydrogen,

said copolymer consisting essentially of units of the formula $-CHX_1-CX_2X_3-$ and



wherein $1 \leqq m \leqq n-1$.

4,283,513

SILOXANE-MODIFIED EPOXY RESIN COMPOSITION

Ryuzo Mikami, Ichihara, Japan, assignor to Toray Silicone Company, Ltd., Tokyo, Japan

Filed Mar. 3, 1980, Ser. No. 126,238
Int. Cl.³ C08L *63/02, 83/06*
U.S. Cl. 525—476 **8 Claims**

1. A siloxane-modified epoxy resin composition consisting essentially of (A) 100 parts by weight of a siloxane-modified epoxy resin prepared by reacting (1) 5 to 70 parts by weight of an alkylphenylpolysiloxane of the general unit formula

wherein each R is an alkyl or a phenyl radical such that the ratio of alkyl radicals to phenyl radicals in the alkylphenylpolysiloxane is 0.3 to 3.0, X is an alkoxy radical or a hydroxyl radical, a is 0.9 to 1.8, and b is 0.01 to 2 with (2) 95 to 30 parts by weight of an epoxy resin having at least two epoxy groups per molecule, (B) 0.01 to 30 parts by weight of an alkoxy group containing organopolysiloxane of the general unit formula

wherein R' is selected from the group consisting of monovalent hydrocarbon radicals and halogen substituted monovalent hydrocarbon radicals, R^2 is an alkyl radical, c is 0.9 to 1.8 and d is 0.01 to 2 and (C) a curing agent for (A).

4,283,514

CHEMICALS FOR TERMINATION OF POLYVINYLCHLORIDE POLYMERIZATIONS

Dean R. Weimer, and Charles M. Starks, both of Ponca City, Okla., assignors to Conoco, Inc., Ponca City, Okla.

Division of Ser. No. 969,742, Dec. 14, 1978, Pat. No. 4,229,598.
This application Aug. 22, 1979, Ser. No. 68,819
Int. Cl.³ C08F *2/42;* **C08K** *5/13*
U.S. Cl. 526—84 **4 Claims**

1. A method for terminating polyvinyl chloride polymerizations comprising injecting into the polymerization reactor at the desired level of conversion a free radical inhibitor obtained by,

(1) methylating phenol with methanol in vapor phase at pressures of from about 1 to about 2500 pounds per square inch gauge, temperatures of from about 400° C. to about 700° C. and liquid hourly space velocity of from about 1 to about 15 in the presence of alumina or alumina containing catalyst and recovering a product stream therefrom;

(2) distilling said product stream into desired fractions and retaining the fraction obtained at temperatures of from about 205° C. to about 230° C. at one atmosphere, and then;

(3) alkylating the retained fraction with acidic catalysts at temperatures of from about 10° C. to about 110° C. and

pressures of at least atmospheric while at a product fraction/alkylating agent weight ratio of from about 1/0.23 to about 1/1.85 respectively, then;

(4) fractionally distilling the product of (3) and retaining the fraction obtained at temperatures of from about 110° C. to about 200° C. at 30 mm of mercury.

4,283,515

SUPPORT, CATALYST AND PROCESS FOR POLYMERIZING OLEFINS

Ronald L. Gibbs, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 24,488, Mar. 27, 1979, abandoned, which is a continuation-in-part of Ser. No. 973,351, Dec. 26, 1978, abandoned, which is a division of Ser. No. 920,769, Jun. 30, 1978, abandoned, which is a continuation-in-part of Ser. No. 837,665, Sep. 29, 1977, abandoned. This application Jun. 17, 1980, Ser. No. 160,331

Int. Cl.³ C08F *4/02, 10/02*

U.S. Cl. 526—127 **14 Claims**

1. A process for the polymerization of one or more alpha olefins under conditions characteristic of Ziegler polymerization which process comprises employing as a polymerization catalyst a composition resulting from the addition of a reducing agent to a mixture of a support suspended in an inert liquid hydrocarbon and a transition metal compound of Groups 4b, 5b, 6b, 7b, or 8 of Mendeleev's Periodic Table under conditions so as to provide a catalytically active solid product and in such proportions that the magnesium:transition metal atomic ratio is from about 0.1:1 to about 30:1 followed by washing the resultant solid catalyst product with an inert liquid hydrocarbon wherein said support comprises the reaction product of (1) a mixture of an organomagnesium compound represented by the formula MgR_2 and a silcon halide represented by the formula $R'_{4-n}SiX_n$, said mixture being in a non-polar solvent, with (2) an alcohol represented by the formula R''OH; wherein the organomagnesium compound is or can be rendered hydrocarbon soluble and wherein each R, R' and R'' is independently a hydrocarbyl group having from 1 to about 20 carbon atoms, X is Cl, Br or I, n has a value of from 1 to 4 and wherein the molar ratio of $R''OH:MgR_2$ is at least 2:1 and the molar ratio of $R''OH:R'_{4-n}SiX_n$ is sufficient so as to provide at least one X group per OH group.

4,283,516

PROCESS FOR THE SUSPENSION POLYMERIZATION OF POLYVINYL CHLORIDE

William D. Peeples, New Castle, Del., assignor to Diamond Shamrock Plastics Corporation, Dallas, Tex.

Continuation-in-part of Ser. No. 19,343, Mar. 12, 1979, abandoned. This application Oct. 29, 1979, Ser. No. 89,096

Int. Cl.³ C08F *2/18*

U.S. Cl. 526—202 **9 Claims**

1. A process for the suspension polymerization in an aqueous medium at temperatures between about 30° and about 80° C. of vinyl chloride monomer with or without suitable comonomer in the presence of an oil soluble initiator wherein said aqueous medium contains from about 0.02 to about 0.75 parts per 100 parts, by weight, of total monomer of a combination of suspending agents composed of (a) a polyvinyl alcohol resin (PVA) with a hydrolysis level of between about 68 percent and 78 percent and having a viscosity in a 4 percent, by weight, solution in water of between about 1 and about 25 centipoises, and (b) a hydroxypropyl cellulose ether (HPC) having a molar substitution of between about 2 and about 4 hydroxypropoxyl groups per anhydroglucose monomer unit in the cellulose chain, with the HPC/PVA ratio, by weight, being between about 1/5 and about 2/1.

4,283,517

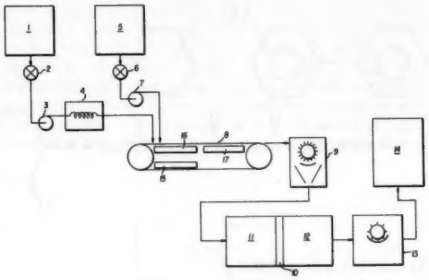
CONTINUOUS PROCESS FOR SOLUTION POLYMERIZATION OF ACRYLAMIDE

Alphonse C. Perricone, and James M. Lucas, both of Houston, Tex., assignors to Milchem Incorporated, Houston, Tex.

Filed Jul. 16, 1979, Ser. No. 57,918

Int. Cl.³ C08F *2/00, 4/30*

U.S. Cl. 526—229 **21 Claims**



1. A continuous polymerization process for producing a continuous, substantially homogeneous stream of a solid, non-tacky polymer which comprises the steps of:

(a) forming a concentrated aqueous monomer solution at a temperature of from 23° to 40° C. to form a single phase solution said monomers being:

(i) a mixture consisting essentially of an alkali metal salt of acrylic acid, a hydroxyalkyl acrylate and acrylamide, in proportions of from 5 to 62 mole%, from 2.1 to 40 mole% and from 31 to 91 mole%, respectively; or

(ii) a mixture consisting essentially of (a) a (meth)acrylamidoalkylsulfonic acid or alkali metal salt thereof and (b) (meth)acrylamide or N-alkyl(meth)acrylamide, in proportions of from 8 to 70 mole% and from 30 to 92 mole %, respectively; or

(iii) mixture (ii), further containing from 0.2 to 4.4 moles of a quaternary ammonium salt cross-linking agent;

(b) heating a continuous stream of the monomer solution of step (a) to a polymerization initiation temperature of from 60° to 80° C. for mixture (i) or from 55° to 65° C. for mixture (ii) or (iii), by passage through an indirect heat exchanger at a rate such that the residence time of the solution in the heat exchanger is not longer than 0.5 minute;

(c) immediately and continuously thereafter depositing the heated stream of monomer solution as a continuous, substantially uniform layer on a moving surface;

(d) substantially simultaneously with step (c), continuously and substantially uniformly applying to the moving surface of catalytically effective amount of an aqueous solution of a polymerization initiator for the monomers, thereby continuously forming a substantially uniform reaction mixture of the heated monomer solution and the initiator on the moving surface said moving surface and said reaction mixture being unheated or heated only sufficiently to keep the temperature of the polymerizing mixture on the moving surface from falling substantially below said polymerization initiation temperature until polymerization is substantially complete; whereby the monomers exothermically and substantially homogeneously polymerize and a portion of the water therein evaporates to form a continuous stream of a substantially homogeneous solid, non-tacky polymer; and

(e) recovering the resultant solid, non-tacky polymer.

4,283,518
PROCESS FOR MANUFACTURING A PETROLEUM RESIN

Toru Iwashita, Yokkaichi; Mineo Nagano, Shinnanyo, and Koji Tanaka, Yokkaichi, all of Japan, assignors to Toyo Soda Manufacturing Co., Ltd., Shinnanyo, Japan

Filed Dec. 13, 1979, Ser. No. 103,538
Claims priority, application Japan, Dec. 13, 1978, 53-153062
Int. Cl.[3] C08F *212/06, 212/08*
U.S. Cl. 526—237 4 Claims

1. A process for manufacturing a petroleum resin comprising mixing (1) a fraction (component A) containing an aromatic hydrocarbon and obtained by the cracking of petroleum and having a boiling point in the range of 140°–280° C. and (2) a thermally polymerized oil (component B) which is a product obtained by polymerizing component A at a temperature of 180°–300° C. for a period of from 10 minutes to 10 hours, the amount of component B being from 1–99% by weight of the mixture; and subjecting said mixture of component A and component B to polymerization employing a Friedel-Crafts catalyst to obtain a petroleum resin having a softening point in the range of 50°–120° C.

4,283,519
ORGANOSILICONE TERPOLYMERS

Arthur N. Pines, Katonah; Gordon C. Johnson, Armonk, and Fannie L. Campbell, Briarcliff Manor, all of N.Y., assignors to Union Carbide Corporation, New York, N.Y.

Filed Dec. 20, 1979, Ser. No. 105,708
Int. Cl.[3] B05D *3/02;* B32B *7/00;* C08G *77/04*
U.S. Cl. 528—26 4 Claims

1. An organosilicone terpolymer of the formula

$$MD_xD_y'D_z''M$$

wherein M, each occurrence, is a end-capping unit of the formula $A_3SiO_{\frac{1}{2}}$ in which A is a monovalent organic radical free of olefinic unsaturation or is hydroxyl bonded directly to the silicon atoms, or M is alkoxy of 1 to 13 carbon atoms,

D is a unit of the formula R_2SiO wherein R is a monovalent hydrocarbon radical free of acetylenic unsaturation,

D' is a unit of the formula RR'SiO wherein R is a monovalent hydrocarbon radical free of acetylenic unsaturation and R' is a polyoxyalkylene unit of the formula $—C_nH_{2n}(OC_2H_4)_a(OC_3H_6)_bOR''$ in which R'' is a hydrogen, acyl of 1 to 8 carbon atoms, or a monovalent hydrocarbon radical of 1 to 13 carbon atoms, n is an integer having an average value from 3 to 8, and a and b are such that the sum of a+b is from 5 to 200 and the quantity a÷(a+b) is from 0 to 1.0,

D'' is a unit of the formula RR'''SiO wherein R is a monovalent hydrocarbon radical free of acetylenic unsaturation and R''' is a radical of the formula $—L—SiR_m''''X_{3-m}$ wherein L is a non-hydrolyzable aliphatic hydrocarbon linkage which separates the silicon atoms by at least two carbon atoms, R'''' is alkyl of up to 8 carbon atoms, X is hydroxyl or a hydrolyzable group, and m is 2, 1, or 0, and

x is an integer from 25 to 500, y is an integer from 1 to 2x, and z is an integer from 1 to 2x.

4,283,520
STORAGE-STABLE, HOMOGENEOUS MIXTURE CONTAINING EPOXIDE RESIN, CURING AGENT AND CURING ACCELERATOR, AND THE USE OF THE MIXTURE FOR PRODUCING CURED PRODUCTS

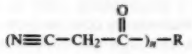
Roland Moser, Basel, and Alfred Renner, Münchenstein, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Apr. 14, 1980, Ser. No. 140,403
Claims priority, application Switzerland, Apr. 20, 1979, 3747/79
Int. Cl.[3] C08G *59/42, 59/46*
U.S. Cl. 528—93 13 Claims

1. A homogeneous mixture of epoxide resin, curing agent for the resin, and curing accelerator, which mixture contains

(a) an epoxide resin having on average more than one epoxide group in the molecule,

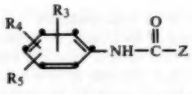
(b) as curing agent for the epoxide resin, a cyanoacetyl compound dissolved in the resin, which compound has a melting point (m.p.) below 120° C. and corresponds to the formula I



(I)

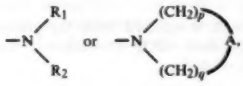
wherein R is the radical of a mono- to tetravalent alcohol or amine having a partial molecular weight of ≦2000, which radical is formed by removal of 1 to 4 hydroxyl hydrogen atoms or amine hydrogen atoms, and n is a number from 1 to 4 inclusive, the amount of (b) being such that to 1 $—CH_2—C{\equiv}N$ group there are 3–4 epoxide groups of the component (a), and

(c) as curing accelerator, to 100 parts by weight of epoxide resin 0.1 to 10 parts by weight of a phenylurea derivative of the formula II

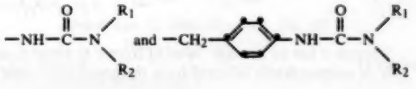


(II)

in which Z is the group



wherein A is $—CH_2—$ or N, p is 0, 1 or 2, and q is 1 or 2, and R_1 and R_2 independently of one another are each an alkyl group having 1 to 4 carbon atoms, and wherein R_3 and R_4 independently of one another are each hydrogen, halogen, alkyl having 1 to 4 carbon atoms, alkoxy having 1 to 4 carbon atoms, or a substituted or unsubstituted phenyl or phenoxy group, and R_5 is hydrogen, trifluoromethyl, nitro or one of the groups



4,283,521

CURABLE AROMATIC EPOXY-POLYIMIDE AND CYCLOALIPHATIC EPOXY-POLYIMIDE COMPOSITIONS

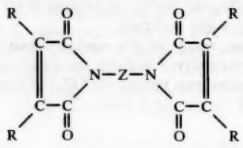
Robert J. Jones, Hermosa Beach, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed Feb. 14, 1979, Ser. No. 12,097
Int. Cl.[3] C08G *73/10, 59/40*
U.S. Cl. 528—117 **35 Claims**

1. A low temperature curable composition comprising:

(a) at least one curable polyimide prepolymer formed at a temperature sufficient to cause thermal reaction between heated components of a mixture of:

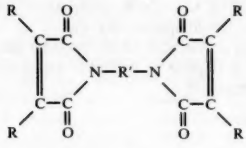
(i) at least one aliphatic bismaleimide of the formula:



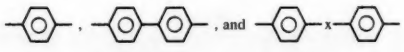
wherein Z is a polyaliphatic ether in which each aliphatic group individually contains from one to about six carbon atoms, and in which each R is independently selected from the group consisting of hydrogen, an aliphatic group containing one or two carbon atoms, a benzenoid radical and a halogen;

(ii) at least one aromatic polyamine; and

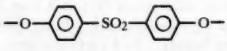
(iii) at least one aromatic bismaleimide of the formula:



wherein each R is independently selected from the group consisting of hydrogen, an aliphatic group containing one or two carbon atoms, a benzenoid radical and a halogen and wherein R′ is a bifunctional benzenoid radical selected from the group consisting of:

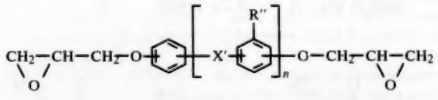


wherein X is selected from the group consisting of: —O—, —S—, —SO_2—, —CH_2—, —C_2H_4—, —CO—, —C_3H_6—, and

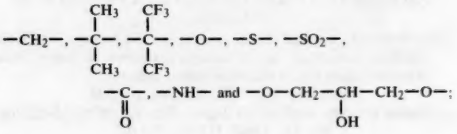


and;

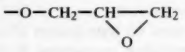
(b) at least one aromatic epoxy resin of the formula:



wherein n has an average value of from 0 to about 6; each X′ is independently selected from the group consisting of:



and each R″ is independently selected from the group consisting of —H, and



4,283,522

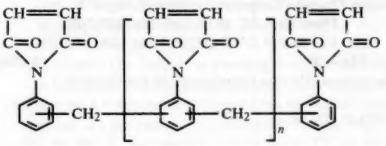
PROCESS FOR PREPARING THERMOSETTING PREPOLYMER FROM MIXTURE OF POLYFUNCTIONAL MALEIMIDE AND BIS-MALEIMIDE

Akio Takahashi, Hitachi-Oota; Yutaka Itoh, Hitachi; Motoyo Wajima, Hitachi; Hirosada Morishita, Hitachi, and Kenji Tsukanishi, Shimodate, all of Japan, assignors to Hitachi Chemical Company, Ltd., Tokyo, Japan

Filed Aug. 31, 1979, Ser. No. 71,518
Claims priority, application Japan, Aug. 31, 1978, 53-106671
Int. Cl.[3] C08G *69/26, 73/10*
U.S. Cl. 528—170 **10 Claims**

1. A process for preparing a thermosetting maleimide prepolymer, which comprises heating, at a temperature of 100° to 150° C. for 10 to 60 minutes,

(A) a polyfunctional maleimide compound obtained by the dehydration reaction of an amide acid formed from maleic anhydride and a polyamine prepared by the condensation of aniline with formaldehyde and represented by the formula (1):



(1)

wherein n is in the range of from 0.1 to 3.0;

(B) a bis-maleimide selected from the group consisting of N,N′-4,4′-diphenylmethane-bis-maleimide, N,N′-methylenebis-(3-chloro-p-phenylene)-bis-maleimide, N,N′-4,4′-diphenyl-sulfone-bis-maleimide, N,N′-4,4′-diphenyl-ether-bis-maleimide, N,N′-ethylene-bis-maleimide, N,N′-hexamethylene-bis-maleimide and combinations thereof; and

(C) a diamine selected from the group consisting of 4,4′-diaminodicyclohexylmethane, 1,4-diaminocyclohexane, 2,6-diaminopyridine, m-phenylenediamine, p-phenylenediamine, 4,4′-diaminodiphenylmethane, 2,2′-bis(4-aminophenyl)propane, benzidine, 4,4′-diaminodiphenylsulfone, bis(4-aminophenyl) methylphosphine oxide, bis(4-aminophenyl)phenylphosphine oxide, bis(4-aminophenyl)methylamine, 1,5-diaminonaphthalene, m-xylylenediamine, p-xylylenediamine, hexamethylenediamine, 6,6′-diamino-2,2′-dipyridyl, 4,4′-diaminobenzophenone, 4,4′-diaminoazobenzene, bis(4-aminophenyl)-phenylmethane, 1,1-bis(4-aminophenyl)cyclohexane, 1,1-bis(4-amino-3-methylphenyl)cyclohexane, 2,5-bis(m-aminophenyl)-1,3,4-oxadiazole, 2,5-bis(p-aminophenyl)-1,3,4-oxadiazole, 2,5-bis(m-aminophenyl)thialoro(4,5-d)thiazole, 5,5′-di(m-aminophenyl)-2,2′-bis(1,3,4-oxadiazolyl), 4,4′-diaminodiphenyl ether, 4,4′-bis(p-

aminophenyl)-2,2'-dithiazole, m-bis(4-p-aminophenyl-2-thiazolyl)benzene, 4,4'-diaminobenzanilide, 4,4'-diaminophenyl benzoate, N,N'-bis(4-aminobenzyl)-p-phenylenediamine, 4,4'-methylenebis(2-chloroaniline) and combinations thereof;

the weight proportion of the polyfunctional maleimide compound (A) relative to the total of the polyfunctional maleimide compound (A) and the bis-maleimide (B) being 10 to 80% and the molar ratio of the total of the polyfunctional maleimide compound (A) and the bis-maleimide (B) to the diamine (C) being 1:1 to 1:0.3.

4,283,523

FLUORO-ALKYL ESTER-TERMINATED LINEAR AROMATIC POLYESTER OF ENHANCED HYDROLYTIC STABILITY

Gideon Salee, Williamsville, and Jerold C. Rosenfeld, Tonawanda, both of N.Y., assignors to Hooker Chemicals & Plastics Corp., Niagara Falls, N.Y.

Filed Jun. 4, 1979, Ser. No. 45,463
Int. Cl.³ C08G *63/66, 63/68, 63/76*
U.S. Cl. 528—176 **11 Claims**

1. In a linear aromatic polyester which comprises monomer residues of a bisphenol and a dicarboxylic acid and in which the terminal residues of the polyester chain comprise a residue of said dicarboxylic acid, the improvement wherein the end carboxylate groups of said terminal dicarboxylic acid residues comprise at least about 5 mole percent of a carboxylate ester of a fluorine substituted saturated aliphatic monofunctional alcohol of 1 to 45 carbon atoms, said proportion being based on the total moles of end groups in the polyester.

4,283,524

PROCESS FOR POLYMERIZATION OF COMPOSITION COMPRISING (1) ALPHA,BETA-UNSATURATED MONOCARBOXYLIC ACID OR AMMONIUM SALT THEREOF AND (2) AMMONIA

Janice L. Greene, Chagrin Falls, Ohio, assignor to The Standard Oil Company, Cleveland, Ohio

Filed Apr. 23, 1979, Ser. No. 32,327
Int. Cl.³ C08G *69/00*
U.S. Cl. 528—363 **39 Claims**

1. A process for producing a resinous polymer containing carbonamide linkages wherein the carbonamide nitrogen is an integral part of the polymer backbone comprising polymerizing a composition comprising (1) at least one alpha, beta-unsaturated monocarboxylic acid or ammonium salt thereof and (2) ammonia.

4,283,525

CONTINUOUS PROCESS FOR INCREASING DISCRETE PARTICLE SIZE OF SOLUTION CARBOXYL POLYMERS

Krishna K. Rao, Paterson, N.J., assignor to National Starch and Chemical Corporation, Bridgewater, N.J.

Filed Feb. 19, 1980, Ser. No. 122,385
Int. Cl.³ C08F *6/12, 6/10, 6/24*
U.S. Cl. 528—489 **9 Claims**

1. A process for producing discrete particles from a carboxyl-containing solution polymer comprising the steps of:

(a) continuously co-feeding into a reactor vessel (1) said solution polymer in an organic solvent or cosolvent system in flowable form, and (2) an aqueous phase containing an alkaline reagent in an amount of 1 to 20%, on a molar basis, of the total carboxyl-containing monomers employed in the polymerization;

(b) continuously stirring together said aqueous phase and said polymer to form a suspension such that the weight ratio of polymer solids to aqueous phase during the co-feeding operation is between about 1:20 and 10:1; and

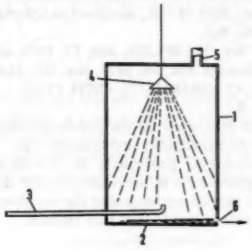
(c) continuously discharging said suspension from the reactor vessel at a rate which is substantially equal to the rate at which said aqueous phase and said polymer are co-fed into the reactor vessel, in which process the size of the polymeric particles produced is increased without destabilization thereof.

4,283,526

METHOD OF TREATING POLYMERLATICES

Bala P. Chandra, Huntingdon; Jeffrey C. Greaves, and Victor G. Lovelock, both of Welwyn Garden City, all of England, assignors to Imperial Chemical Industries Limited, London, England

Continuation of Ser. No. 728,994, Oct. 4, 1976, now Defensive Publication No. T962,008. This application Mar. 15, 1979, Ser. No. 20,924
Claims priority, application United Kingdom, Oct. 13, 1975, 41848/75
Int. Cl.³ C08F *6/16, 6/14*
U.S. Cl. 528—500 **5 Claims**



1. A method of continuously treating an aqueous latex of a vinyl chloride polymer which contains unreacted residual monomer from the polymerisation reaction used for the production of the polymer, which method comprises:

(a) feeding the aqueous latex as a spray at a temperature within the range of 30°–0° C. below the boiling point of the latex into a vessel defining a chamber so that at least 80% by weight of the droplets of spray avoid contact with the side wall of the chamber, wherein the pressure inside the chamber is atmospheric or less than atmospheric, and

(b) contacting the falling spray with steam flowing countercurrent thereto, whereby residual monomer is removed with the flow of steam leaving the chamber.

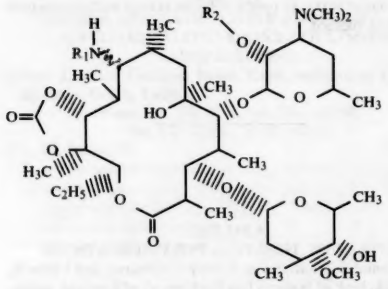
4,283,527

ERYTHROMYCYLAMINE 11,12-CARBONATE AND DERIVATIVES THEREOF

Frank C. Sciavolino, East Lyme, Conn., assignor to Pfizer Inc., New York, N.Y.

Filed Apr. 1, 1980, Ser. No. 136,197
Int. Cl.³ C07H *17/08*
U.S. Cl. 536—9 **11 Claims**

1. A compound of formula I



I

wherein R_1 is hydrogen or N-carbobenzoxy; and R_2 is hydrogen, acetyl, propionyl or 3-carbethoxypropionyl; or the pharmaceutically acceptable acid addition salts of those compounds wherein R_1 is hydrogen.

4,283,528

1-N-AMINOHYDROXYACYL DERIVATIVES OF GENTAMICIN B

Peter J. L. Daniels, Cedar Grove, and Tattanahalli L. Nagabhushan, Parsippany, both of N.J., assignors to Schering Corporation, Kenilworth, N.J.

Continuation of Ser. No. 697,298, Jun. 17, 1976, abandoned. This application Apr. 24, 1979, Ser. No. 32,808

Int. Cl.[3] A61K *31/71;* **C07H** *15/22*

U.S. Cl. 536—17 R **11 Claims**

1. A compound selected from the group consisting of 1-N-(R-β-amino-α-hydroxypropionyl-gentamicin B, 1-N-(R-γ-amino-α-hydroxybutyryl) gentamicin B, 1-N-(R-δ-amino-α-hydroxyvaleryl) gentamicin B, the respective R,S diastereoisomeric mixtures of said compounds and the non-toxic pharmaceutically acceptable acid addition salts thereof.

4,283,529

3-O-DEMETHYL DERIVATIVES OF SANNAMYCIN C AND ANTIBIOTIC AX-127B-1

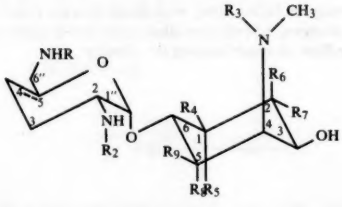
William Rosenbrook, Jr., Libertyville, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

Filed Mar. 3, 1980, Ser. No. 126,732

Int. Cl.[3] A61K *31/71;* **C07H** *15/22*

U.S. Cl. 536—17 R **25 Claims**

1. A 3-O-demethylsannamycin C or antibiotic AX-127B-1 derivative represented by the formula



III

wherein: R is hydrogen or methyl, R_2 and R_3 are the same or different members of the group consisting of hydrogen, acyl of the formula

wherein R_{10} is loweralkyl, aminoacyl, diaminoacyl, N-loweralkylaminoacyl, N,N-diloweralkylaminoacyl, hydroxy-substituted aminoacyl, loweralkyl, aminoloweralkyl, diaminoloweralkyl, hydroxyloweralkyl, N-loweralkylaminoloweralkyl, N,N-diloweralkylaminoloweralkyl, N-loweralkylaminohydroxyloweralkyl and N,N-diloweralkylaminohydroxyloweralkyl; R_4 and R_5 are hydrogen or amino with the limitation that one of either R_4 or R_5 must be hydrogen; R_6 and R_7 are selected from the group consisting of hydrogen, hydroxy, amino and chloro with the limitation that one of either R_6 or R_7 must be hydrogen; R_8 and R_9 are hydrogen or hydroxy with the limitation that one of either R_8 or R_9 must be hydrogen; and the pharmaceutically acceptable salts thereof.

4,283,530

PROCESS FOR THE PREPARATION OF HEPARIN

Hans-Jorg Vidic, Berlin, Fed. Rep. of Germany, assignor to Schering Aktiengesellschaft, Berlin, Fed. Rep. of Germany

Continuation of Ser. No. 851,562, Nov. 14. 1977, abandoned. This application Jul. 2, 1979, Ser. No. 54,071

Claims priority, application Fed. Rep. of Germany, Nov. 12, 1976, 2652272

Int. Cl.[3] C08B *37/10*

U.S. Cl. 536—21 **11 Claims**

1. A method of extracting heparin from a heparin-containing source which comprises extracting heparin from intestinal brine which is produced by dewatering and preservation treatment of heparin-containing animal intestines whose mucosa has been removed, said dewatering and preservation treatment consisting essentially of treating said intestines with sodium chloride.

4,283,531

SYNTHESIS OF β-LACTAMS HAVING A SUBSTITUTED HYDROXYMETHYLENE GROUP AT THE POSITION α TO THE LACTAM CARBONYL GROUP

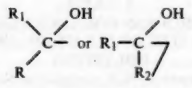
Ashit K. Ganguly, Upper Montclair; Viyyoor M. Girijavallabhan, East Orange; Patricia Cavender, Lawrenceville; Olga Sarre, Verona, and Stuart W. McCombie, West Orange, all of N.J., assignors to Schering Corporation, Kenilworth, N.J.

Division of Ser. No. 911,858, Jun. 2, 1978. This application Oct. 4, 1979, Ser. No. 81,734

Int. Cl.[3] C07D *499/00, 501/00*

U.S. Cl. 544—30 **14 Claims**

1. The process for preparing and isolating a β-lactam having a substituted hydroxymethylene group at the position α to the lactam carbonyl group of the following formulae:



wherein R and R_1 together with the carbon atom to which they are attached is the carbon residue of an aldehyde or ketone which contains no functional group that would preferentially react with a zinc halo-β-lactam intermediate over the oxo functionality;

and wherein R_2 is a group of the formula

$$-(CH_2)_m-X_p-(CH_2)_n-$$

wherein X is O or S; m is 0–3; n is 0–3; p is 0–1; with the proviso that that m+n+p is 3–5;

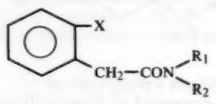
which comprises the reaction of an α-halo-β-lactam wherein halo is chlorine, bromine or iodine, with zinc or zinc amalgam in an anhydrous aprotic medium at temperatures in the range of from about 0° C. to about 110° C., in the presence of an appropriate aldehyde or ketone, and breaking the zinc complex by the addition of water or a buffer of PH of about 5–7.

4,283,532
PROCESS FOR PREPARATION OF O-(2,6-DICHLOROANILINO)PHENYLACETIC ACID AND NOVEL INTERMEDIATE FOR USE IN PREPARATION OF THE SAME

Fujio Nohara, Kamiichi, Japan, assignor to Ikeda Mohando Co., Ltd., Toyama, Japan

Filed Aug. 7, 1979, Ser. No. 64,404
Claims priority, application Japan, Aug. 8, 1978, 53-96434
Int. Cl.³ C07C *51/06, 102/00;* **C07D** *295/18*
U.S. Cl. 544—165 **2 Claims**

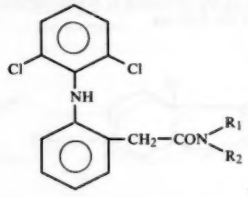
1. A process for the preparation of o-(2,6-dichloroanilino)-phenylacetic acid or its pharmacologically acceptable acid addition salt, which comprises reacting an N,N-disubstituted-o-halogenophenylacetamide derivative represented by the following general formula (I):



(I)

wherein R_1 and R_2, which may be the same or different, stand for a lower alkyl group, or one of R_1 and R_2 stands for a lower alkyl group and the other of R_1 and R_2 stands for a phenyl or benzyl group, or R_1 and R_2 are bonded together to form a heterocyclic ring together with a nitrogen atom and/or an oxygen atom, and X stands for an iodine or bromine atom,

with 2,6-dichloroaniline in the presence of a copper catalyst to form an N,N-disubstituted-o-(2,6-dichloroanilino)phenylacetamide represented by the following general formula (II):



(II)

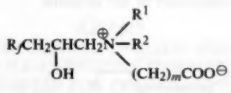
wherein R_1 and R_2 are as defined above, and hydrolyzing with an alkali.

4,283,533
N-TYPE BETAINES OF 2-HYDROXY-1,1,2,3,3-PENTAHYDROPERFLUOROALKYLAMINES

John W. Richter, Kennett Square, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 9, 1979, Ser. No. 92,767
Int. Cl.³ C07D *265/30;* **B01F** *17/28*
U.S. Cl. 544—171 **4 Claims**

1. An amphoteric N-type betaine having surfactant properties represented by the formula:



wherein

R_f is C_4–C_{20} perfluoroalkyl;

R^1 and R^2 are methyl or, together with the N atom to which they are bonded, form a piperidino, morpholino, or N-alkyl (C_1–C_4) piperazino; and

m is a whole number between 1 and 4;

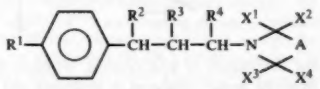
and mixtures thereof.

4,283,534
REDUCTIVE ALKYLATION OF NITROGEN HETEROCYCLES

Norbert Goetz, Worms, and Leopold Hupfer, Friedelsheim, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Mar. 14, 1980, Ser. No. 130,448
Claims priority, application Fed. Rep. of Germany, Apr. 11, 1979, 2914646; Sep. 27, 1979, 2939060
Int. Cl.³ C07D *265/28, 295/02, 295/08*
U.S. Cl. 544—174 **1 Claim**

1. A process for the preparation of an aralkylamine of the formula I



I

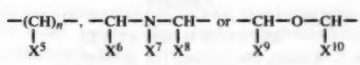
where

R^1 is hydrogen, an aliphatic hydrocarbon radical of 1 to 10 carbon atoms, a cycloaliphatic radical of 5 to 7 carbon atoms or alkoxy of 1 to 6 carbon atoms,

R^2, R^3 and R^4 are hydrogen or alkyl of 1 to 4 carbon atoms,

X^1, X^2, X^3 and X^4 are hydrogen or alkyl of 1 to 4 carbon atoms,

A is



X^5, X^6, X^7, X^8, X^9 and X^{10} are hydrogen or alkyl of 1 to 4 carbon atoms and

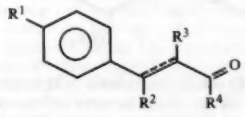
n is 2, 3 or 4,

by reacting a secondary amine of the formula II

II

where

X^1, X^2, X^3, X^4 and A have the above meanings with a carbonyl compound of the formula III



III

where

R^1, R^2, R^3 and R^4 have the above meanings and the bond shown in broken lines is a double bond or a single bond, wherein the reaction is carried out in the presence of hydrogen and of a hydrogenation catalyst which consists essentially of palladium, mixed with zinc, cadmium, manganese and/or a rare earth metal oxide, on an inert carrier.

4,283,535

METHOD FOR THE PRODUCTION OF 2,4,6-TRIKETOHEXAHYDROTRIAZINES

Josef Disteldorf; Werner Hübel, and Elmar Wolf, all of Herne, Fed. Rep. of Germany, assignors to Chemische Werke Huls AG, Fed. Rep. of Germany

Filed May 14, 1979, Ser. No. 38,692

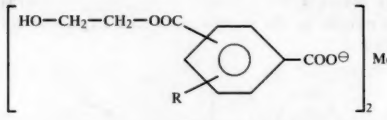
Claims priority, application Fed. Rep. of Germany, May 13, 1978, 2821109

Int. Cl.[3] **C07D** *251/34*

U.S. Cl. 544—193 **6 Claims**

1. A method of preparing 2, 4, 6-triketohexahydrotriazines which comprises:

catalytically trimerizing an organic isocyanate at 60°–150° C. in an inert, polar solvent present in an amount of 5–40% by weight with respect to the quantity of said isocyanate, in the presence of 0.1–5 weight % of a catalyst of the formula:



or hydrated derivatives of said catalyst, wherein R is selected from the group consisting of hydrogen and C_1–C_4 alkyl, and Me^{2+} is a bivalent metal cation;

interrupting the trimerization at a conversion of about 50%, by cooling said trimerization, and then

isolating said 2, 4, 6-triketohexahydrotriazine.

4,283,536

PREPARATION OF VINCADIFFORMINE AND RELATED DERIVATIVES

Martin E. Kuehne, Burlington, Vt., assignor to University of Vermont, Burlington, Vt.

Continuation-in-part of Ser. No. 865,657, Dec. 29, 1977, Pat. No. 4,154,943. This application Apr. 30, 1979, Ser. No. 34,792

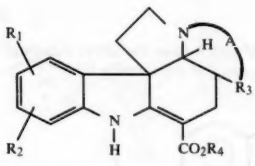
The portion of the term of this patent subsequent to May 15, 1996, has been disclaimed.

Int. Cl.[3] **C07D** *471/14, 487/04*

U.S. Cl. 546—51 **24 Claims**

1. A process for the preparation of ±vincadifformine and related compounds of the formula I:

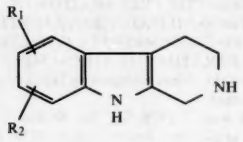
(I)



wherein each of R_1 and R_2 individually is hydrogen, acyloxy, carbamate, lower alkoxy of one to seven carbon atoms, lower alkyl of one to seven carbon atoms, or halo; R_3 and R_4 are the same or different and are hydrogen or alkyl having from 1 to 7 carbon atoms; A represents an alkyl chain or unsaturated aliphatic hydrocarbon chain of 2 to 7 carbon atoms and which may be substituted by one or more alkyl, hydroxy or hydroxyalkyl groups having from 1 to 7 carbon atoms, which comprises the steps of:

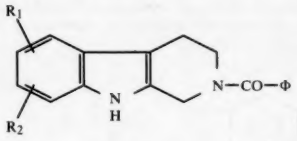
(a) reacting a tetrahydro-β-carboline of the formula:

(II)



with benzoyl chloride to form a compound of the formula:

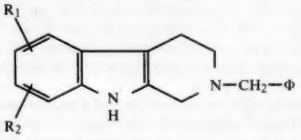
(III)



wherein ϕ represents a phenyl radical

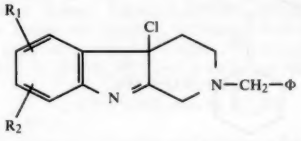
(b) reducing the compound of formula III by means of a reducing agent to form a compound of the formula:

(IV)



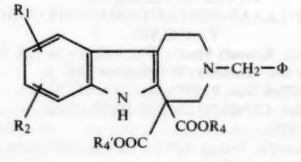
(c) chlorinating the compound of formula IV with t-butyl hypochlorite in the presence of triethylamine to form a compound of the formula:

(V)



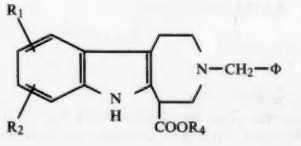
(d) reacting the compound of formula V with a dialkyl malonate salt of sodium or thallium wherein each alkyl group has 1 to 7 carbon atoms at reflux to form a compound of the formula:

(VI)

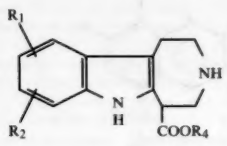


(e) decarboalkoxylating partly the compound of formula VI to form a compound of the formula:

(VII)



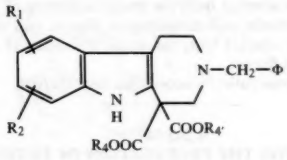
(f) hydrogenating the compound of formula VII into a compound of the formula:



(VIII)

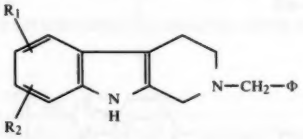
(g) reacting the compound of formula VIII with an aldehyde selected from the group of haloaldehyde, alkylsulfoxyaldehyde, arylsulfoxyaldehyde, epoxyaldehyde or mixture thereof wherein said aldehyde has 3–14 carbon atoms in the presence of triethylamine to yield the desired vincadifformine or related compound of formula I.

17. A process for preparing a dialkyl 3-benzyl-1,2,3,4,5,6-hexahydroazepino-[4,5b]-indole-5,5-dicarboxylate of the formula:



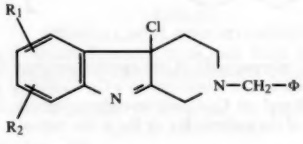
(VI)

wherein each of R_1 and R_2 individually is hydrogen, hydroxy, acyloxy, carbamate, lower alkoxy of 1 to 7 carbon atoms, lower alkyl of 1 to 7 carbon atoms, or halo, R_4 and R_4, are the same or different alkyl groups of 1 to 7 carbon atoms which comprises chlorinating 2-benzyl-1,2,3,4-tetrahydro-9H-pyrido [3,4b]-indole of the formula:



(IV)

with t-butyl hypochlorite under cooling in the presence of dry triethylamine to form a chloroindolenine of the formula:



(V)

and immediately reacting said chloroindolenine (formula V) with a dialkyl malonate salt of sodium or thallium wherein each alkyl group has 1 to 7 carbon atoms.

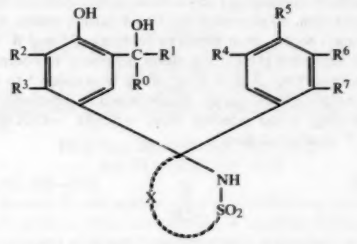
4,283,537

THIAZINE-1,1-DIOXIDE AND ISOTHIAZOLE-1,1-DIOXIDE DERIVATIVES AND PROCESS FOR PREPARATION

Louis Cincotta, and James W. Foley, both of Andover, Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Nov. 2, 1978, Ser. No. 956,908
Int. Cl.³ C07D *275/04*
U.S. Cl. 546—94 **26 Claims**

14. A compound of the formula



wherein R^0 is perhalomethyl selected from trifluoromethyl, difluoromethyl, difluorochloromethyl, dichlorofluoromethyl, dichloromethyl and trichloromethyl; R^1 is hydrogen or perhalomethyl having the same meaning given above; R^2 is hydrogen or methyl; R^3 is hydrogen, alkyl or alkoxy; R^2 and R^3 taken together represent the carbon atoms necessary to complete a fused benzene ring; R^4 and R^6 each are selected from hydrogen, alkyl, alkoxy, chloro and fluoro; R^5 is hydrogen, alkyl, alkoxy, —OP^I wherein P^I is a protecting group, —N,N-(dialkyl)amino, —N,N-(w-R^8-alkyl)$_2$amino wherein R^8 is halo or —OP^{II} wherein P^{II} is a protecting group; —$NHCOCH_3$, piperidino, pyrrolidino, N-methylpiperazino, morpholino, thiomorpholino or tetrahydro-2H,4H-1,3,6-dioxazocino; R^7 is hydrogen, alkyl, alkoxy or —OP^{III} wherein P^{III} is a protecting group usually the same as P^I or P^{II}; R^6 and R^7 taken together represent the carbon atoms necessary to complete a fused benzene ring provided R^2 and R^3 are taken separately when R^6 and R^7 are taken together; and R^4, R^5 and R^6 taken together represents the atoms necessary to complete a fused [ij]quinolizidine ring and X represents the atoms necessary to complete 2,3-dihydronaphtho[1,8-de]-1,2-thiazine-1,1-dioxide or 2,3-dihydrobenz[d]isothioazole-1,1-dioxide.

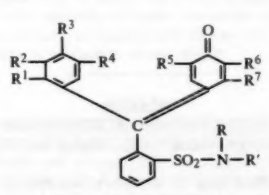
4,283,538

NOVEL TRIARYLMETHANE COMPOUNDS

James W. Foley, Andover, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 26, 1979, Ser. No. 106,904
Int. Cl.³ C07D *455/04*; C07C *143/80*
U.S. Cl. 546—94 **23 Claims**

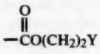
9. A compound of the formula



wherein R^1 is hydrogen, alkyl containing 1 to 4 carbon atoms, alkoxy containing 1 to 4 carbon atoms or hydroxy; R^2 and R^4 each are selected from hydrogen, alkyl containing 1 to 4 carbon atoms, alkoxy containing 1 to 4 carbon atoms, chloro and fluoro; R^1 and R^2 taken together represent the carbon atoms necessary to complete a fused benzene ring; R^3 is hydrogen; alkyl containing 1 to 4 carbon atoms, alkoxy containing 1 to 4 carbon atoms, hydroxy, -N,N-(dialkyl)amino wherein each alkyl contains 1 to 4 carbon atoms, -N,N-(w-R^8alkyl)$_2$amino wherein R^8 is halo or hydroxy and said alkyl contains 1 to 4 carbon atoms; piperidino, pyrrolidino, N-methylpiperazino, morpholino, thiomorpholino or tetrahydro-2H,4H-1,3,6-dioxazocino; R^2, R^3 and R^4 taken together represent the atoms necessary to complete a fused quinolizidine ring; R^5 is hydrogen, alkyl containing 1 to 4 carbon atoms, phenyl, alkoxy containing 1 to 4 carbon atoms, chloro, fluoro or perhalome-

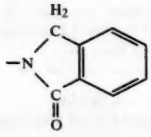
thylcarbinol; R^6 is hydrogen, alkyl containing 1 to 4 carbon atoms, alkoxy containing 1 to 4 carbon atoms, chloro or fluoro; R^7 is hydrogen, alkyl containing 1 to 4 carbon atoms, alkoxy containing 1 to 4 carbon atoms or hydroxy; R^6 and R^7 taken together represent the carbon atoms necessary to complete a fused benzene ring; R is an alkyl group containing 1 to 4 carbon atoms or a phenyl group, unsubstituted or substituted with a solubilizing group selected from $-SO_3H$, $-COOH$ and $-OH$; R′ is selected from

wherein R″ is methyl, unsubstituted or substituted with one or two halo groups or substituted with a phenyl, alkoxy containing 1 to 4 carbon atoms or phenoxy group, and



wherein Y is an electron-withdrawing group having a positive sigma value greater than 0.6 as defined by Hammett's Equation; and R and R′ taken with said

represents



4,283,539

ISOQUINOLINE ACETIC ACIDS

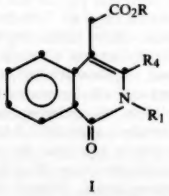
Rodney C. Schnur, Noank, Conn., assignor to Pfizer Inc., New York, N.Y.

Filed Dec. 18, 1979, Ser. No. 104,939

Int. Cl.³ C07D *217/16;* A61K *31/47*

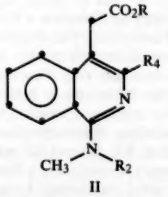
U.S. Cl. 546—141 **13 Claims**

1. A compound selected from the group consisting of those of the formulae



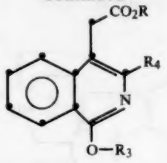
I

and



II

-continued



III

wherein

R is selected from the group consisting of hydrogen and alkyl of 1 to 3 carbon atoms;

R_1 is selected from the group consisting of $-CH_2-X$ and $-O-CH_2-X$;

R_2 is $-CH_2-X$;

R_3 is selected from the group consisting of $-X$ and $-CH_2-X$;

and R_4 is selected from hydrogen and methyl;

wherein X is selected from the group consisting of phenyl, monosubstituted and disubstituted phenyl, said substituents being selected from the group consisting of chloro, bromo and fluoro;

and the pharmaceutically-acceptable salts thereof.

4,283,540

PROCESS FOR THE PREPARATION OF CATIONIC NAPHTHOLACTAM DYESTUFFS

Alfred Brack, Odenthal, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

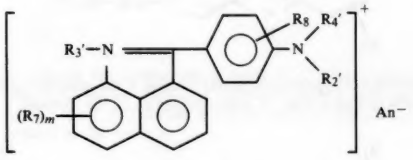
Continuation of Ser. No. 784,360, Apr. 4, 1977, abandoned. This application Sep. 18, 1978, Ser. No. 943,473

Claims priority, application Fed. Rep. of Germany, Apr. 6, 1976, 2614886

Int. Cl.³ C07D *215/12, 209/80*

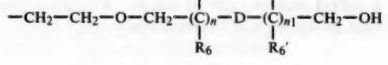
U.S. Cl. 546—165 **6 Claims**

1. A process for the preparation of a dyestuff of the formula



wherein

R_3' and R_4' independently of one another represent C_1–C_6-alkyl, which can be substituted by a C_1–C_4-alkoxy, cyano, aminocarboxyl or C_1–C_4-alkoxycarbonyl group, and at least one of the radicals R_3' or R_4' is the radical



n and n_1 independently of one another denote 0, 1 or 2,

R_5 and R_5' independently of one another denote hydrogen, methyl, ethyl or hydroxyl,

R_6 and R_6' independently of one another denote hydrogen, methyl or ethyl, or

R_5 and R_6 conjointly denote methylene or ethylidene, D denotes a direct bond, vinylene, ethinylene, sulphur or $-O-(CH_2-CH_2O)_x$,

x=0, 1 or 2,

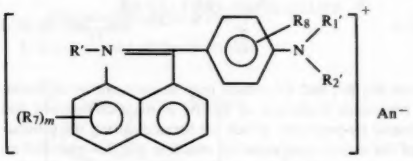
R_2' represents C_1–C_6-alkyl, which can be substituted by a C_1–C_4-alkoxy, cyano, aminocarbonyl or C_1–C_4-alkoxycarbonyl group; or represents phenyl, cyclopentyl, cyclohexyl, benzyl or phenylethyl, which, in the rings, can be substituted by 1–5 halogen or C_1–C_4-alkyl groups or by 1 or 2 hydroxyl, C_1–C_4-alkoxy or nitro groups,

R_7 represents C_1–C_6-alkyl, halogen, hydroxyl, C_1–C_4-alkoxy, cyano, aminocarbonyl, C_1–C_4-alkoxycarbonyl, amino, acetylamino, mono- and di-C_1–C_4-alkylamino, C_1–C_4-alkylsulphonylamino, C_1–C_4-alkylmercapto, cyanoethylmercapto, phenylmercapto, phenylmercapto substituted by chlorine or methyl, or aminosulphonyl or C_1–C_4-alkylsulphonyl,

R_8 represents hydrogen, methyl, ethyl or C_1–C_4-alkoxy or a R_8 which is in the o-position relative to the nitrogen represents, conjointly with R_2, propylene-(1,2) ethylene, methyl-substituted propylene-(1,3) or methyl-substituted ethylene, m represents 0, 1 or 2 and

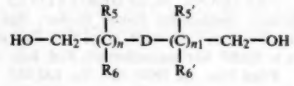
An^- represents an anion,

consisting essentially reacting a dyestuff of the formula



V

wherein R′ and R_1' independently of one another represent C_1–C_6-alkyl, which can be substituted by a C_1–C_4-alkoxy, cyano, aminocarbonyl or C_1–C_4-alkoxycarbonyl group, and at least one of the radicals R′ and R_1' is ethyl substituted by chlorine, bromine or hydroxyl, with a polyhyric alcohol of the formula



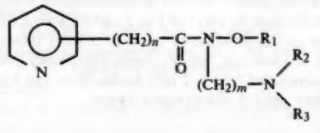
at 80° to 160° C. in the presence of a catalyst selected from the group consisting of an aluminium oxide, active alumina, silica, active zeolite finely divided platinum, phosphorus pentoxide, polyphosphoric acid, phosphoric acid, sulfuric acid, titanium oxide, zirconium oxide, thorium oxide and polystyrene-sulphonic acids.

4,283,541
PYRIDYLACYL-HYDROXAMATES

James R. Shroff, Riverside, Conn., and Rohit Desai, Yonkers, N.Y., assignors to USV Pharmaceutical Corporation, Tuckahoe, N.Y.

Filed May 27, 1980, Ser. No. 153,480
Int. Cl.³ C07D *213/56*
U.S. Cl. 546—336 **8 Claims**

1. A compound of the formula



wherein

R_1, R_2 and R_3 are independently hydrogen, lower alkyl, phenyl or phenyl-lower alkyl,

n is an integer from 1 to 5, and

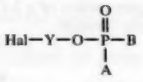
m is an integer from 2 to 5.

4,283,542
PROCESS FOR THE PREPARATION OF PHOSPHOBETAINES

Anthony J. O'Lenick, Jr., Fairlawn, and Raymond L. Mayhew, Summit, both of N.J., assignors to Mona Industries, Paterson, N.J.

Filed Nov. 30, 1978, Ser. No. 965,459
Int. Cl.³ C07F *9/09, 9/58*
U.S. Cl. 548—112 **26 Claims**

1. Process for the production of phosphobetaine compounds, which process comprises reacting in aqueous medium a tertiary reactant of at least 6 carbon atoms, to produce an amphoteric phosphobetaine surfactant having at least one phosphorus-containing anion in the molecule, wherein said phosphate ester reactant is of the formula



(Ia)

where

Hal is halogen

A is selected from O^-, OM, and —O—Y—Hal

B is selected from O^- and OM′

with the proviso that only one of A and B can be O^-

Y may be alkylene, optionally interrupted by up to 3 oxygen atoms, of up to 12 carbon atoms, which alkylene chain may optionally be substituted with lower alkyl, alkoxy, hydroxy or hydroxyalkyl, e.g., of not more than 10 carbon atoms each;

M and M′ are individually selected from (a) hydrogen, (b) an organic radical selected from alkyl or hydroxy-alkyl of up to 6 carbon atoms, polyhydroxyalkyl of up to 10 carbon atoms, glyceryl, cycloalkyl of up to 6 carbon atoms, aryl or arylalkyl of up to 10 carbon atoms, or (c) a salt radical selected from alkali metals, alkaline earth metals, and mono-, di-, or triethanolamine, with the proviso that when both M and M′ are contained in said phosphate reactant and M or M′ is an organic radical (b), the other of M and M′ must be hydrogen or a salt radical (c).

24. Process for the preparation of a 3-hydroxypropylphosphobetaine compound, which process comprises reacting an amine reactant with a cyclic hydroxypropylene containing phosphate ester reactant, wherein the amine reactant is selected from primary, secondary and tertiary amines having a total of from 6 to 60 carbon atoms therein.

4,283,543
PROCESS FOR PREPARING THE COMPOUND 5-T-BUTYL-2-METHYLAMINO-1,3,4-TRIADIAZOLE

David L. Booth, and Richard M. Rodebaugh, both of Crystal Lake, Ill., assignors to Morton-Norwich Products, Inc., Chicago, Ill.

Filed Oct. 19, 1979, Ser. No. 86,414
Int. Cl.³ C07D *285/12*
U.S. Cl. 548—138 **25 Claims**

1. A process for preparing the compound 5-t-butyl-2-methylamino-1,3,4-thiadiazole in high yield comprising:

(i) adding 4-methyl-3-thiosemicarbazide to a solution of pivalic acid to form a slurry in a first vessel;

(ii) placing a solution comprising polyphosphoric acid and concentrated sulfuric acid in a second vessel;

(iii) feeding the contents of said first and second vessels concomitantly into a third vessel while agitating and maintaining the temperature of the resultant mixture at a maximum of about 90° C. to form 5-t-butyl-2-methylamino-1,3,4-thiadiazole;

(iv) neutralizing said mixture with a neutralizing agent comprising an organic solvent and an alkaline substance dis-

solved in water to form an essentially neutralized two-phase, water-organic solvent system; and

(v) separating from the neutralized system of (iv) an organic phase and recovering the compound 5-t-butyl-2-methylamino-1,3,4-thiadiazole therefrom.

4,283,544

PREPARATION OF 2-(2,2-DIMETHYL-3-BUTEN-1-YL)-2-OXAZOLINES

Manfred Jautelat, Burscheid, and Dieter Arlt, Cologne, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

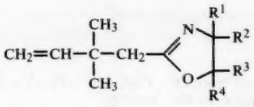
Filed Feb. 26, 1979, Ser. No. 15,376

Claims priority, application Fed. Rep. of Germany, Mar. 15, 1978, 2811190

Int. Cl.³ C07D *263/12, 263/14*

U.S. Cl. 548—216 **1 Claim**

1. A process for the preparation of a 2-(2,2-dimethyl-3-buten-1-yl)-2-oxazoline of the formula

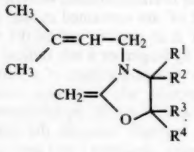


in which

R^1, R^2, R^3 and R^4 each independently is hydrogen, alkyl with 1–4 carbon atoms, aralkyl with 7–9 carbon atoms, phenyl or phenyl substituted by halogen, alkoxy with 1–4 carbon atoms or phenoxy, or

R^1 and R^2 or R^3 and R^4 form an alkylene chain of 4–6 carbon atoms, or

R^1 and R^3 form an alkylene chain of 3 or 4 carbon atoms, comprising pyrolyzing at about 200° to 500° C. a 2-methylene-3-(3-methyl-2-butenyl)-oxazolidine of the formula



4,283,545

PROCESS FOR THE PREPARATION OF 1,2,4-TRIAZOLE

Harald Knorr, Gersthofen; Thomas Maier, Frankfurt am Main; Hilmar Mildenberger, Kelkheim, and Helmut Korbanka, Adelsried, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Oct. 22, 1980, Ser. No. 199,460

Claims priority, application Fed. Rep. of Germany, Oct. 26, 1979, 2943265

Int. Cl.³ C07D *249/08*

U.S. Cl. 548—262 **4 Claims**

1. A process for the preparation of 1,2,4-triazole by cyclization of N,N′-diformylhydrazine in the presence of ammonia at elevated temperature, which comprises supplying the amount of ammonia required either (a) by forming it in situ from ammonium carbonate or ammonium hydrogen carbonate with heating to 150°–250° C., or (b) introducing gaseous ammonia into the N,N′-diformylhydrazine under the same conditions, while operating in both cases without pressure and in formamide as solvent, and constantly distilling off the water formed.

4,283,546

1,2,4-TRIGLYCIDYL TRIAZOLIDINES-3,5-DIONES AND A PROCESS FOR THE PREPARATION THEREOF

Ludwig Rottmaier, Odenthal-Gloebusch, and Rudolf Merten, Leverkusen, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Fed. Rep. of Germany

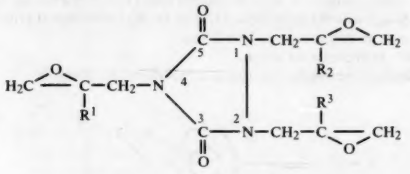
Filed Aug. 28, 1980, Ser. No. 182,110

Claims priority, application Fed. Rep. of Germany, Sep. 1, 1979, 2935354

Int. Cl.³ C07D *405/14;* **C08G** *59/32, 59/42, 59/62*

U.S. Cl. 548—264 **7 Claims**

1. A composition having an epoxide value of from 0.6 to 1.13 and consisting essentially of a compound which corresponds to the following general formula I



(I)

wherein R^1, R^2, and R^3, which may be the same or different, each represents hydrogen or methyl as main component and oligomeric by-products, which are formed during the production of the above compound by reaction of 1,2,4-triazolidine-3,5-dione with an at least equivalent quantity of an epihalohydrin or β-methyl epihalohydrin and subsequent reaction of the resulting material with a hydrogen halide acceptor.

2. A compound of the general formula, as claimed in claim 1.

4,283,547

PARABANIC ACID DERIVATIVES

Ulrich Schirmer, Heidelberg; Rainer Becker, Bad Durkheim, and Bruno Wuerzer, Otterstadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

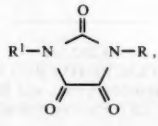
Filed Mar. 24, 1980, Ser. No. 132,983

Claims priority, application Fed. Rep. of Germany, Apr. 25, 1979, 2916647

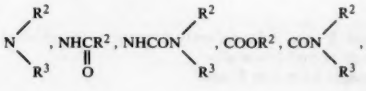
Int. Cl.³ C07D *233/96*

U.S. Cl. 548—307 **3 Claims**

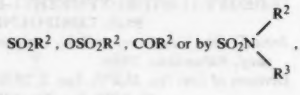
1. A parabanic acid derivative of the formula



where R^1 denotes alkyl of 1 to 4 carbon atoms, 2-chloroethyl, 2-methoxyethyl, methoxymethyl, allyl, 2-chloropropen-(1)-yl-(3), buten-(1)-yl-(3), propargyl, butyn-(1)-yl-(3), 1-chlorobutyn-(2)-yl-(4), cyclopentyl, cyclohexyl, 3-methylcyclohexyl, 2,6-dimethylcyclohexyl or cyclopropyl and R denotes phenoxyphenyl which is unsubstituted or is substituted in one or both rings by alkyl of 1 to 3 carbon atoms, alkyl of 1 to 3 carbon atoms substituted by 1 to 3 halo atoms, methoxymethyl, cyclohexyl, benzyl, methoxy, ethoxy, methoxy or ethoxy substituted by 1 to 2 halo atoms, from 1 to 3 halo atoms, methylthio, phenyl, thiocyanato, cyano



-continued



R^2 and R^3 being identical or different and each denoting hydrogen or having the meanings given for R^1.

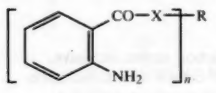
4,283,548

DIISATOIC ACID OR TRIISATOIC ACID DERIVATIVES

Walter Sibral, Tulln, and Oskar Schmidt, Kittsee, both of Austria, assignors to Lim-Holding S.A, Luxembourg, Luxembourg

Filed Apr. 10, 1979, Ser. No. 28,754
Int. Cl.³ C07D *401/06, 233/64*
U.S. Cl. 548—310 **9 Claims**

1. A compound of the formula I

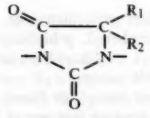


(I)

wherein n represents 2 or 3, X stands for oxygen or sulfur and R for a group of the formula II

(II)

in which m stands for 1 or 2, Y for B when m is 1 and Y further represents a di- or trivalent alkyl group having 1 to 5 carbon atoms when m is 2, B represents alkylene having 1 to 4 carbon atoms and Z is



wherein R_1 and R_2 independently of one another are hydrogen or methyl.

4,283,549

METHOD OF PRODUCING ALKANDIOL-DIAMINOBENZOATES

Boris Holm, Karlskoga, Sweden, assignor to Aktiebolaget Bofors, Bofors, Sweden

Filed Dec. 4, 1978, Ser. No. 966,404
Claims priority, application Sweden, Dec. 12, 1977, 7714047
Int. Cl.³ C07C *101/62*
U.S. Cl. 560—50 **9 Claims**

1. A method of producing 1,3 propanediol-di-p-aminobenzoate from p-nitro-benzoic acid and 1,3 propanediol, characterized in that the nitrobenzoic acid and the diol are esterified in a melt at 160°–210° C. after which the intermediate obtained is dissolved in the solvent anisole and is reduced with hydrogen gas in the presence of said solvent to the amino compound desired.

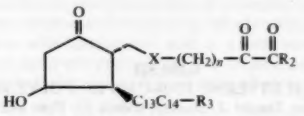
4,283,550

1-DESCARBOXY-1-KETOESTER(KETOACID)-PROSTAGLANDINS

Middleton B. Floyd, Jr., Suffern, N.Y., assignor to American Cyanamid, Stamford, Conn.

Filed Sep. 27, 1979, Ser. No. 79,631
Int. Cl.³ C07C *177/00*
U.S. Cl. 560—53 **32 Claims**

1. Compounds of the formula



Ia

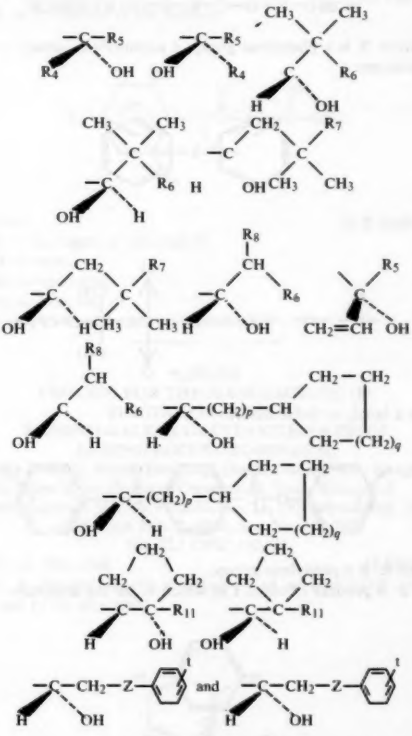
wherein R_2 is selected from the group hydroxy and C_1 to C_7 alkoxy;

X is selected from the group cis or trans —CH=CH— and —CH_2—CH_2

$C_{13}C_{14}$ is selected from the group trans —CH=CH— and —CH_2—CH_2—;

n is the integer 2, 3 or 4; and

R_3 is selected from the group consisting of:



Wherein R_4 is hydrogen or methyl; R_5 is selected from the group consisting of C_4–C_7 alkyl; R_6 is selected from the group consisting of C_3–C_6 alkyl; R_7 is selected from the group consisting of C_2–C_4 alkyl; R_8 is selected from the group consisting of C_1–C_2 alkyl; R_{11} is selected from the group consisting of C_3–C_7 alkyl; p is an integer from 0 to 3; q is 1 or 2; Z is a divalent radical selected from the group consisting of —O— and —CH_2—; and t is selected from the group consisting of

hydrogen, chloro, fluoro, dichloro, triflurometh yl, methoxy; the racemic mixtures thereof; the mirror images thereof and where R_2 is hydroxy the pharmaceutically acceptable salts thereof.

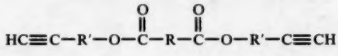
4,283,551

NOVEL ACETYLENE END-CAPPED POLYESTERS

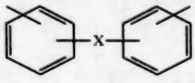
Wai Y. Chow; Daniel J. Hurley; James H. Rea, and S. Paul Thackaberry, all of Houston, Tex., assignors to Gulf Oil Corporation, Pittsburgh, Pa.

Filed Sep. 13, 1979, Ser. No. 75,364
Int. Cl.³ C07C *69/76*
U.S. Cl. 560—86 **4 Claims**

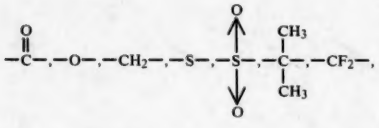
1. A heat-curable acetylene end-capped polyester having the structure:



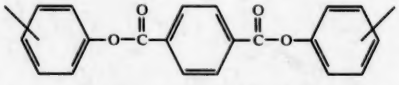
where R is a phenylene group, a naphthylene group, or the structure:



where X is

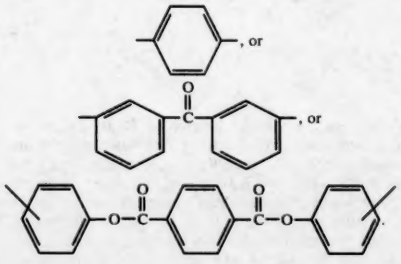


or a bond, or the structure:



and R′ is a phenylene group.

2. A product of claim **1** in which R has the structure:



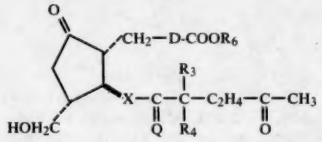
4,283,552

11-DEOXY-11-HYDROXYMETHYL-INTER-OXA-19-OXO-PGE$_1$ COMPOUNDS

John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 25,879, Apr. 2, 1979. This application Mar. 20, 1980, Ser. No. 132,235
Int. Cl.³ C07C *177/00*
U.S. Cl. 560—121 **4 Claims**

1. A compound of the formula



wherein D is

(1) $(CH_2)_3—O—CH_2—$,
(2) $(CH_2)_3—O—CF_2—$, or
(3) $—CH_2—O—(CH_2)_3—$;
wherein Q is α—OH:β—R_5 or α—R_5:β—OH, wherein R_5 is hydrogen or methyl;
wherein R_6 is
(a) hydrogen,
(b) alkyl of one to 12 carbon atoms, inclusive,
(c) cycloalkyl of 3 to 10 carbon atoms, inclusive,
(d) aralkyl of 7 to 12 carbon atoms, inclusive,
(e) phenyl,
(f) phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive,
(g) —(p-Ph)—CO—CH_3,
(h) —(p-Ph)—NH—CO—(p-Ph)—NH—CO—CH_3,
(i) —(p-Ph)—NH—CO—(p-Ph),
(j) —(p-Ph)—NH—CO—CH_3,
(k) —(p-Ph)—NH—CO—NH_2,
(l) —(p-Ph)—CH=N—NH—CO—NH_2,
(m) β-naphthyl,
(n) $—CH_2—CO—R_{28}$,
wherein (p-Ph) is para-phenyl or inter-para-phenylene,
wherein R_{28} is phenyl, p-bromophenyl, p-biphenylyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, or
(o) a pharmacologically acceptable cation;
wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro; and
wherein X is cis- or trans—CH=CH—.

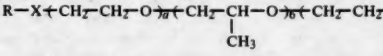
4,283,553

HYDROPEROXIDE DERIVATIVES OF HYDROXYETHYLATED COMPOUNDS AND METHOD OF PRODUCING SAME

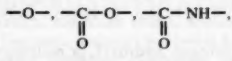
Sergei S. Ivanchev, ulitsa Nalichnaya, 36/3, kv. 97; Anatoly A. Syrov, ulitsa III Internatsionala, 52, kv. 51; Valery N. Pavljuchenko, prospekt Energetikov, 34, kv. 53; Ninel N. Lesnikova, ulitsa Vernosti, 20, kv. 1, and Diana A. Rozhkova, prospekt Metalistov, 8, kv. 77, all of Leningrad, U.S.S.R.

Filed Sep. 24, 1979, Ser. No. 78,037
Int. Cl.³ C07C *69/66, 43/11, 179/025*
U.S. Cl. 560—176 **8 Claims**

1. Hydroperoxide derivatives of hydroxyethylated compounds of the general formula:

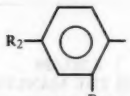


with x selected from the group consisting of



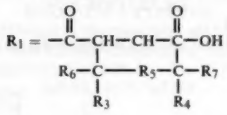
a—whole number selected from the range from 10 to 30, b is absent, c is absent,

R is selected from the group of normal alkyls from C_8 to C_{20} secondary alkyls C_{14}, C_{15},



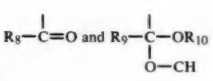
where R_2 is selected from the group of normal alkyls of C_8 to C_{12},

where



where

R_3 and R_4 are selected from the group consisting of



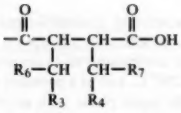
when $R_3 \neq R_4$,

where R_8 is selected from the group consisting of $-CH_3$ and H with $R_{6,7,9}=H, R_5$ is absent,

R_9 is selected from the group consisting of $-CH_3$ and H with $R_{6,7,8}=H, R_5$ is absent,

R_{10} is selected from the group of normal alkyls from C_1 to C_9; $R_5=-CH_2$ - if $R_{6,7,8,9}=H$, if R_5 is absent,

R_1 is acyclic and is



R_6 is selected from the group consisting of $-CH_3$ and H with $R_{7,8,9}=H$, R_5 is absent,

R_7 is selected from the group consisting of $-CH_3$ and H with $R_{6,8,9}=H$, R_5 is absent;

with x=—O—, b—whole number selected from the range from 8 to 24, the total of (a+c) is a whole number selected from the range of 6 to 30

$R=R_1$.

4,283,554

PROCESS FOR PRODUCTION OF β-CHLOROALANINE

Chozo Inoue, and Soyao Moriguchi, both of Yokohama, Japan, assignors to Showa Denko Kabushiki Kaisha, Tokyo, Japan

Filed May 29, 1980, Ser. No. 154,379

Claims priority, application Japan, Jun. 8, 1979, 54/71165

Int. Cl.³ C07C *101/10*

U.S. Cl. 562—574 **4 Claims**

1. A process for preparing β-chloroalanine comprising the steps of:

(a) reacting an aqueous solution of a bisulfite or sulfite addition compound of chloroacetaldehyde with ammonia and, then, with hydrocyanic acid or a salt thereof, whereby α-amino-β-chloropropionitrile is formed, and

(b) hydrolyzing the resultant α-amino-β-chloropropionitrile under an acidic condition.

4,283,555

AMIDINOUREAS

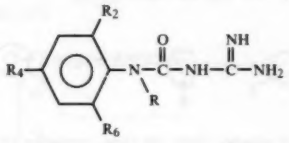
Julius Diamond, Lafayette Hill, and Jerome J. Zalipsky, Melrose Park, both of Pa., assignors to William H. Rorer, Inc., Ft. Washington, Pa.

Continuation of Ser. No. 379,773, Jul. 16, 1973, abandoned. This application Mar. 2, 1979, Ser. No. 16,997

Int. Cl.³ C07C *129/12;* **A61K** *31/17*

U.S. Cl. 564—53 **12 Claims**

1. A compound of the formula



where:

R is hydrogen or loweralkyl;

R_2 is halo;

R_4 is hydrogen;

R_6 is halo; and or

the non-toxic acid addition salts thereof.

4,283,556

PROCESS FOR THE MANUFACTURE OF SUBSTANTIALLY PURE 3-AMINO-4-ALKOXY-ACYLANILIDES FROM 2,4-DINITROCHLOROBENZENE

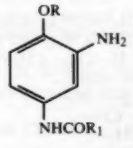
Philip C. Lang, Dover Township, Ocean County, N.J., assignor to Toms River Chemical Corporation, Toms River, N.J.

Continuation of Ser. No. 941,533, Sep. 11, 1978, abandoned. This application Feb. 7, 1980, Ser. No. 119,245

Int. Cl.³ C07C *102/00*

U.S. Cl. 564—144 **12 Claims**

1. A process for the manufacture of an acylanilide compound of the structure

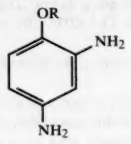


where R is hydrogen, lower alkyl, hydroxy-lower alkyl or lower alkoxy-lower alkyl; and

R_1 is lower alkyl, phenol, lower alkylphenyl, lower alkoxy, lower alkoxyphenyl, chlorophenyl, nitrophenyl, dichlorophenyl, chloro-lower alkyl, cyano-lower alkyl, lower

alkyl amino, sulfamoylphenyl, carbamoylphenyl or lower alkoxy-lower alkyl;

comprising the step of treating an alcohol solution of a diamino compound of the structure



with a substantially equivalent weight of an acylating agent of structure $R_1COOCOR_1$, added over a period of at least about 1 hour at a temperature in the range of about 0° to about 5° C., to give an alcohol solution of the acylanilide compound.

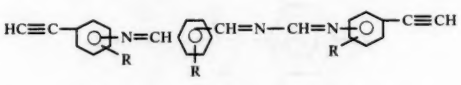
4,283,557

ACETYLENE-TERMINATED DIANIL MONOMER AND THE POLYMER THEREFROM

Theodore R. Walton, Annandale, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 10, 1979, Ser. No. 102,293
Int. Cl.³ C07C *119/00*
U.S. Cl. 564—272 **6 Claims**

1. A compound with the formula



wherein R is selected from the class consisting of H—, F—, Cl—, $CH_{3-n}F_n$, and $CH_{3-n}Cl_n$— and n is an integer from 1 to 3.

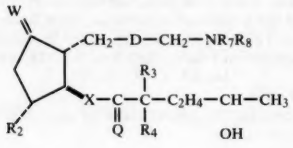
4,283,558

2-DECARBOXY-2-AMINOMETHYL-19-HYDROXY-PG COMPOUNDS

John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 25,899, Apr. 2, 1979, Pat. No. 4,228,104. This application Oct. 26, 1979, Ser. No. 88,662
Int. Cl.³ C07C *87/50*
U.S. Cl. 564—305 **263 Claims**

1. A compound of the formula



wherein D is

(1) cis-CH=CH—CH_2—$(CH_2)_g$—CH_2—,
(2) cis-CH=CH—CH_2—$(CH_2)_g$—CF_2—,
(3) cis-CH_2—CH=CH—CH_2—CH_2—,
(4) trans-$(CH_2)_3$—CH=CH—,
(5) —$(CH_2)_3$—$(CH_2)_g$—CH_2—,
(6) —$(CH_2)_3$—CH_2—CF_2—,
(7) —$(CH_2)_3$—O—CH_2—,
(8) —$(CH_2)_2$—O—$(CH_2)_2$—,
(9) —CH_2—O—$(CH_2)_3$—,
(10) —(m-ph)—$(CH_2)_2$—, or
(11) —(m-ph)—O—CH_2—

wherein m-ph is inter-meta-phenylene, and
wherein g is zero, one, two, or three;
wherein Q is α-OH:β-R_5 or α-R_5:β-OH,
wherein R_5 is hydrogen or methyl,
wherein R_7 and R_8 are hydrogen, alkyl of one to 12 carbon atoms, inclusive, benzyl, or phenyl, being the same or different;
wherein R_2 is hydrogen, hydroxyl, or hydroxymethyl;
wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro;
wherein W is oxo, methylene, α-OH:B-H, or α-H:β-OH;
and wherein X is cis- or trans-CH=CH—, —C≡C—, or —CH_2CH_2—.

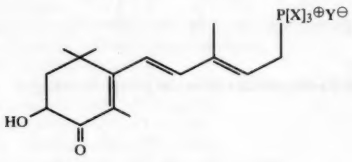
4,283,559

PROCESS FOR THE MANUFACTURE OF CYCLOHEXENE DERIVATIVES

Emil A. Broger, Magden; Yvo Crameri, Oberwil; Hans G. W. Leuenberger, Bättwil; Erich Widmer, Münchenstein, and Reinhard Zell, Rodersdorf, all of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed May 21, 1979, Ser. No. 40,625
Claims priority, application Switzerland, Jun. 2, 1978, 6074/78; Mar. 29, 1979, 2922/79
Int. Cl.³ C07F *9/54*
U.S. Cl. 568—11 **2 Claims**

1. A phosphonium salt of the general formula



wherein X is aryl; and Y is halogen.

4,283,560

BULK CYCLOHEXANOL/CYCLOHEXANONE SEPARATION BY SELECTIVE ADSORPTION ON ZEOLITIC MOLECULAR SIEVES

Chien C. Chao, Millwood, and John D. Sherman, Chappaqua, both of N.Y., assignors to Union Carbide Corporation, New York, N.Y.

Filed Nov. 30, 1979, Ser. No. 98,714
Int. Cl.³ C07C *49/303*
U.S. Cl. 568—366 **4 Claims**

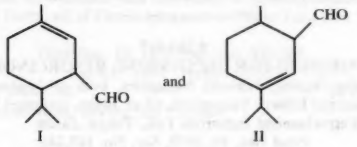
1. Process for separating cyclohexanone from admixture with cyclohexanol by selective adsorption which comprises contacting a mixture comprising said compounds at a temperature of from 70° to 250° C. and at a pressure sufficient to maintain the system in the liquid phase with an adsorbent composition comprising at least one crystalline aluminosilicate zeolite selected from the group consisting of zeolite X in which the zeolitic cations are predominantly calcium, barium, strontium, or a mixture of at least two thereof, and zeolite Y in which the zeolitic cations are predominantly lithium, sodium, barium, or a mixture of at least two thereof, whereby cyclohexanone is selectively adsorbed thereon, removing the non-adsorbed portion of said mixture from contact with the zeolite adsorbent and desorbing the cyclohexanone adsorbate therefrom by contacting said adsorbent with a desorbing agent and recovering the desorbed cyclohexanone.

4,283,561
MIXTURE OF ALDEHYDES RESULTING FROM HYDROFORMYLATION OF α-TERPINENE

Jens Hagen, Ketsch, and Klaus Bruns, Krefeld-Traar, both of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Düsseldorf-Holthausen, Fed. Rep. of Germany

Filed Nov. 14, 1979, Ser. No. 94,277
Claims priority, application Fed. Rep. of Germany, Nov. 16, 1978, 2849642
Int. Cl.³ C07C *47/42*
U.S. Cl. 568—446 **1 Claim**

1. A mixture consisting of the compounds of formulas

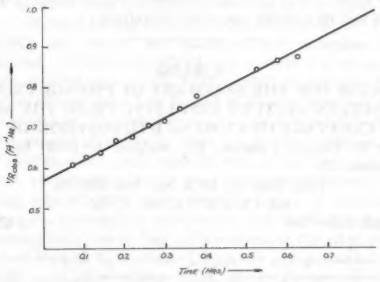


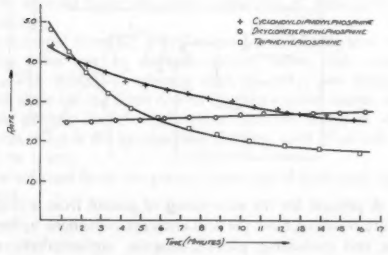
I II

4,283,562
HYDROFORMYLATION PROCESS USING STABLE RHODIUM CATALYST

Ernst Billig, and Donald L. Bunning, both of Charleston, W. Va., assignors to Union Carbide Corporation, New York, N.Y.

Filed Oct. 26, 1979, Ser. No. 88,827
Int. Cl.³ C07C *45/50*
U.S. Cl. 568—454 **11 Claims**





1. In a process for the hydroformylation of an olefin to produce aldehydes having one more carbon atom than the olefin comprising reacting said olefin with hydrogen and carbon monoxide in a liquid reaction medium which contains a soluble rhodium complex catalyst consisting essentially of rhodium complexed with carbon monoxide and a phosphine ligand and wherein the hydroformylation reaction conditions are controlled to a temperature of from about 90° to about 145° C., a total gas pressure of hydrogen, carbon monoxide and olefin of less than about 450 pounds per square inch absolute, a carbon monoxide partial pressure of less than about 55 pounds per square inch absolute, a hydrogen partial pressure of less than about 200 pounds per square inch absolute, and at least about 6 total moles of said phosphine ligand for each mole of catalytically-active rhodium metal present in the rhodium complex catalyst, the improvement comprising improving the stability of said catalyst against deactivation by employing as said phosphine ligand a phosphine represented by the following formula (I):

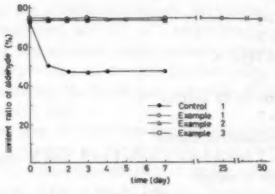
$$R_nPPh_{3-n} \qquad (I)$$

wherein R represents a branched chain alkyl group having from 3 to 9 carbon atoms or a cycloalkyl group having from 5 to 12 carbon atoms, n represents an integer of 1 or 2 and Ph represents phenyl.

4,283,563
PROCESS FOR PREPARATION OF ALDEHYDES

Yasujiro Kawabata, Musashino, and Ikuei Ogata, Tokyo, both of Japan, assignors to Agency of Industrial Science & Technology, Tokyo, Japan

Filed Feb. 26, 1980, Ser. No. 124,796
Claims priority, application Japan, Jun. 12, 1979, 54-73692
Int. Cl.³ C07C *45/50*
U.S. Cl. 568—454 **10 Claims**



1. A process for the preparation of aldehydes by hydroformylation of olefins, which comprises reacting an olefin with hydrogen and carbon monoxide in the presence of a platinum-phosphine complex catalyst, wherein a compound represented by the following general formula:

$$SnM_m$$

wherein M stands for an element of the group VIB of the Periodic Table and m is 1 or 2, or
$SnSO_4$ is used as a promotor for said reaction wherein an aldehyde is formed by hydroformylation of said olefin.

4,283,564
PROCESS FOR PREPARING METHACROLEIN

Wolfgang Bernhagen, Mülheim; Hanswilhelm Bach, Duisburg; Eike Brundin, Dinslaken; Wilhelm Gick, Duisburg; Helmut Springer, and Adolf Hack, both of Oberhausen, all of Fed. Rep. of Germany, assignors to Ruhrchemie AG, Oberhausen, Fed. Rep. of Germany

Filed Dec. 21, 1979, Ser. No. 106,211
Claims priority, application Fed. Rep. of Germany, Dec. 22, 1978, 2855504
Int. Cl.³ C07C *47/22*
U.S. Cl. 568—461 **14 Claims**

1. In a process for preparing methacrolein by catalytic reaction between propionaldehyde and formaldehyde, the improvement wherein said catalyst is a mixture of a secondary amine and an organic carboxylic acid with up to 8 carbon atoms selected from the group consisting of formic acid, acetic acid, propionic acid, n-butanoic acid, i-butanoic acid, oxalic

acid, maleic acid, acetylene dicarboxylic acid, malonic acid, glutaric acid, succinic acid, tartaric acid, adipic acid, hydroxy succinic acid, salicylic acid and 2-ethylhexanoic acid and the process is carried out at a temperature of 70° to 120° C.

4,283,565

PROCESS FOR PREPARING BENZYLALCOHOLS

Günther Bernhardt, St. Augustin, and Gerhard Daum, Cologne, both of Fed. Rep. of Germany, assignors to Dynamit Nobel AG, Troisdorf, Fed. Rep. of Germany

Filed Dec. 29, 1978, Ser. No. 974,468

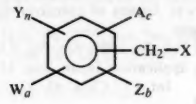
Claims priority, application Fed. Rep. of Germany, Dec. 31, 1977, 2759168; Jun. 9, 1978, 2825364

Int. Cl.³ C07C *29/128*

U.S. Cl. 568—648 **48 Claims**

1. A process for preparing benzylalcohol or benzylalcohol having a substituent on the benzene ring which comprises:

A. Contacting a benzylchloride and/or bromide or a benzylchloride and/or bromide singularly or multiply substituted on the benzene ring which compound has the formula



wherein

Y=halogen and/or alkyl

n=0 to 5

W=—CH_2—X

a=0 to 5

Z=hydroxy or alkoxy

b=0 to 3

A=nitro and/or nitrile

c=o to 2 and a+b+n+c=1 to 5, and X represents chlorine or bromine

at a temperature of 100° to 250° C. with an alkali metal or alkaline earth metal formate such that said benzylchloride and/or bromide reacted is in the heterogeneous phase in the presence of a catalyst selected from the group consisting of tertiary amines, tertiary phosphines, quaternary ammonium salts and quaternary phosphonium salts and in the absence of a solvent to form benzylformate or a benzylformate which contains a substituent on the benzene ring; and

B. Thereafter converting the so formed benzylformate or substituted benzylformate by means of a transesterification step to the corresponding alcohol by contacting the same with an alcohol in the presence of an esterification catalyst.

4,283,566

PROCESS FOR OBTAINING HALOGENATED DIPHENOLS

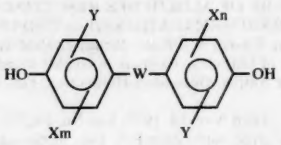
Victor Mark, Evansville, Ind., assignor to General Electric Company, Mt. Vernon, Ind.

Division of Ser. No. 58,000, Jul. 16, 1979, which is a division of Ser. No. 882,242, Feb. 28, 1978, Pat. No. 4,210,765. This application Jan. 21, 1980, Ser. No. 113,479

Int. Cl.³ C07C *39/16, 37/00, 43/23*

U.S. Cl. 568—726 **7 Claims**

1. A halogenated diphenol mixture having a significantly reduced quantity of trihalo substituted and tetrahalo substituted diphenol, said mixture containing predetermined, statistical quanities of unreacted diphenol, monohalodiphenol and dihalodiphenol, said halogenated diphenol being represented by the general formula



wherein Xm and Xn are chlorine, bromine and mixtures thereof with the proviso that either Xm or Xn is chlorine; Y is independently selected from the group consisting of C_1–C_4 alkyl and hydrogen; m and n are each 0–2 with the proviso that m+n equal at least 0.1, but no more than 2.0; and, W is —O—.

4,283,567

METHOD FOR RECOVERING RESORCINOL

Hirohiko Nambu; Hiroaki Nakagawa, both of Iwakuni, and Masayasu Isibasi, Yamaguchi, all of Japan, assignors to Mitsui Petrochemical Industries Ltd., Tokyo, Japan

Filed Dec. 19, 1979, Ser. No. 105,246

Claims priority, application Japan, Dec. 20, 1978, 53-156247

Int. Cl.³ C07C *37/68*

U.S. Cl. 568—754 **9 Claims**

1. A method for recovering resorcinol from the high-boiling by-products formed by the acid-cleavage of m-diisopropylbenzene dihydroperoxide which comprises thermally cracking the high-boiling by-products under substantially anhydrous conditions and without supplying any inert gas, said thermal cracking being carried out in the presence of at least one ammonium compound selected from the group consisting of ammonium sulfate and ammonium bisulfate at a temperature of about 170° C. to about 350° C. and at a pressure of less than 50 mm Hg gauge and recovering resorcinol therefrom.

4,283,568

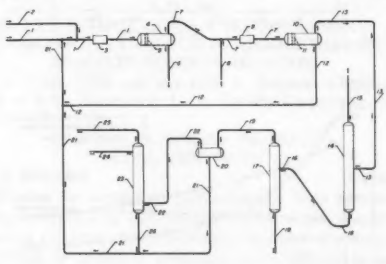
PROCESS FOR THE RECOVERY OF PHENOL FROM A REACTION MIXTURE RESULTING FROM THE ACID CLEAVAGE OF CUMENE HYDROPEROXIDE

Peter R. Pujado, Palatine, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Dec. 31, 1979, Ser. No. 108,736

Int. Cl.³ C07C *37/68, 37/86*

U.S. Cl. 568—754 **2 Claims**



1. A process for the recovering of phenol from a reaction mixture resulting from the acid cleavage of cumene hydroperoxide and containing phenol, acetone, alphamethylstyrene, cumene and unreacted cumene, which process comprises the steps of:

(a) effecting the neutralization of said reaction mixture by admixing an alkali metal phenate therewith at a temperature of from about 90° F. to about 120° F.;

(b) recovering substantially all of said acetone by distillation from the neutralized reaction mixture;

(c) separating the substantially acetone-free reaction mixture

by distillation into a phenol fraction and a cumene-methylstyrene fraction containing residual phenol;

(d) recovering said phenol fraction by withdrawal as a bottoms product from the last-mentioned distillation;

(e) contacting the cumene-methylstyrene fraction with an alkali metal hydroxide and converting the residual phenol contained therein to an alkali metal phenate; and,

(f) recycling said alkali metal phenate to the aforesaid neutralization of said acid cleavage reaction mixture.

4,283,569

HYDROXYALKYL AND OXOALKYL SUBSTITUTED PHENOLS AS ANALGESICS AND SEDATIVES

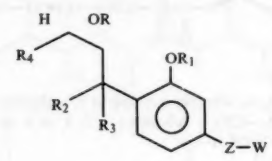
Thomas H. Althuis, Groton; Charles A. Harbert, Waterford; Michael R. Johnson, and Lawrence S. Melvin, Jr., both of Gales Ferry, all of Conn., assignors to Pfizer Inc., New York, N.Y.

Filed Sep. 13, 1977, Ser. No. 832,868

Int. Cl.[2] C07C *39/06, 39/10*

U.S. Cl. 568—764 **14 Claims**

1. A compound having the formula:



wherein

R is selected from the group consisting of hydrogen and alkanoyl having from one to five carbon atoms;

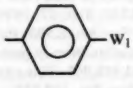
R_1 is selected from the group consisting of hydrogen, benzyl, alkanoyl having from one to five carbon atoms, $P(O)(OH)_2$ and mono- and disodium and potassium salts thereof, $—CO(CH_2)_2COOH$ and sodium and potassium salts thereof, and $—CO—(CH_2)_p—NR_5R_6$ wherein p is 0 or an integer from 1 to 4; each of R_5 and R_6 when taken individually is selected from the group consisting of hydrogen and alkyl having from one to four carbon atoms; R_5 and R_6 when taken together with the nitrogen to which they are attached form a 5- or 6-membered heterocyclic ring selected from the group consisting of piperidino, pyrrolo, pyrrolidino, morpholino and N-alkylpiperazino having from one to four carbon atoms in the alkyl group;

each of R_2 and R_4 is selected from the group consisting of hydrogen, alkyl having from one to six carbon atoms, phenyl, pyridyl and phenylalkyl having from one to four carbon atoms in the alkyl moiety;

R_3 is selected from the group consisting of hydrogen and methyl;

Z is selected from the group consisting of (a) alkylene having from one to thirteen carbon atoms; (b) $—(alk_1)_m—O—(alk_2)_n—$ wherein each of (alk_1) and (alk_2) is alkylene having from one to thirteen carbon atoms, with the proviso that the summation of carbon atoms in (alk_1) plus (alk_2) is not greater than thirteen; each of m and n is 0 or 1; and

W is selected from the group consisting of hydrogen, pyridyl,



wherein W_1 is selected from the group consisting of hydrogen, fluoro and chloro;

and the pharmaceutically acceptable acid addition salts of those compounds wherein R_1 is $—CO—(CH_2)_p—NR_5R_6$ and/or R_2, R_4 or W is pyridyl.

4,283,570

PROCESS FOR PREPARING RESORCINOL

Hiroaki Nakagawa, Iwakuni; Noriyuki Hirowatari, Ohtake, and Takayuki Nakamura, Iwakuni, all of Japan, assignors to Mitsui Petrochemical Industries Ltd., Tokyo, Japan

Continuation of Ser. No. 954,547, Oct. 25, 1978, abandoned, which is a continuation of Ser. No. 822,634, Aug. 8, 1977, abandoned. This application Jan. 28, 1980, Ser. No. 115,704

Claims priority, application Japan, Aug. 18, 1976, 51-97680

Int. Cl.[3] C07C *37/08*

U.S. Cl. 568—768 **15 Claims**

1. A process for preparing resorcinol from an oxidation product of diisopropylbenzene which comprises

(1) a first step of pre-treating an oxidation product of m-diisopropylbenzene composed of m-diisopropylbenzene dihydroperoxide and by-product m-substituted carbinol hydroperoxide and/or dicarbinol with hydrogen peroxide in the presence of sulfuric acid as an acid catalyst in a heterogeneous system of an aqueous aromatic hydrocarbon solvent at a temperature of about 30° C. to 60° C., for a reaction time of from about 3 minutes to about 60 minutes, the pre-treatment being performed while removing by-product water as an azeotrope with the aromatic hydrocarbon in the treating system, while maintaining the concentrations of the hydrogen peroxide and the acid catalyst in the aqueous solution of the treating system at 1 to 15 moles/liter, and 0.5 to 5 moles/liter, respectively, separating the aromatic hydrocarbon solvent layer containing the pre-treated reaction product from the aqueous layer containing the hydrogen peroxide of the first step pre-treatment; and

(2) a second step of acid-cleaving the pre-treated reaction product recovered in the aromatic hydrocarbon solvent layer, in the substantial absence of hydrogen peroxide at a temperature of about 40° to 100° C., the second step being performed in the presence of an acid-cleavage catalyst selected from the group consisting of sulfuric acid and silica-alumina, the amount of sulfuric acid being 0.1 to 15% by weight, based on the pre-treated reaction product and the amount of silica-alumina being 2 to 100% by weight based on the pre-treated reaction product and recovering the resorcinol.

4,283,571

PROCESS FOR THE CATALYTIC ISOMERIZATION OF O-CRESOL

Karl-Heinz Keim; Reinhard Kiauk, both of Wesseling, and Ewald Meisenburg, Heimerzheim, all of Fed. Rep. of Germany, assignors to Union Rheinische Braunkohlen Kraftstoff Aktiengesellschaft, Wesseling, Fed. Rep. of Germany

Filed Jan. 30, 1979, Ser. No. 7,721

Claims priority, application Fed. Rep. of Germany, Feb. 3, 1978, 2804537

Int. Cl.[3] C07C *39/07*

U.S. Cl. 568—783 **4 Claims**

1. In a process for isomerisation of o-cresol to m-cresol in the presence of an alumina and silica containing catalyst at elevated temperatures, the improvement which comprises reacting the o-cresol at temperatures of about 350° to 450° C. in the presence of an acidly acting crystalline aluminosilicate zeolite of the ZSM-type with a composition of oxides and water in the molar ratio of $1 \pm 0.4\ M_2O/n:Al_2O_3:5–100\ SiO_2:0–60\ H_2O$, M representing a cation having a valence of n.

4,283,572

CONVERSION OF ALKYL PHENYL ETHER TO ALKYLPHENOL

James D. Klicker, Morgantown, W. Va., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Dec. 27, 1979, Ser. No. 107,690
Int. Cl.³ C07C *39/06*
U.S. Cl. 568—783 2 Claims

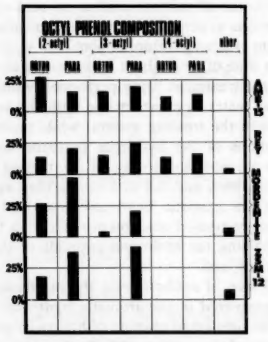
1. A process for the conversion of an alkyl phenyl ether to the corresponding alkylphenol comprising heating an nonyl phenyl ether in the presence of a dehydrated sulfonic acid type cation exchange resin, at a temperature within the range of from about 60° C. to about 120° C.

4,283,573

LONG-CHAIN ALKYLPHENOLS

Lewis B. Young, Skillman, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Nov. 20, 1979, Ser. No. 96,093
Int. Cl.³ C07C *37/11*
U.S. Cl. 568—794 15 Claims



1. A process for the production of alkyl-substituted phenolic compounds comprising:

contacting a phenol with an alkylating agent having a reactive alkyl group at a temperature of between about 50° C. and about 500° C. and a pressure within the approximate range of 10^4 N/m^2 to 10^7 N/m^2, said alkyl group having at least 5 carbon atoms, said contacting being in the presence of a crystalline zeolite catalyst which is characterized by the presence therein of networks of pores having openings thereto, the major dimension of said openings being between about six and about seven angstroms.

4,283,574

PROCESS FOR THE SYNTHESIS OF 2,6-XYLENOL AND 2,3,6-TRIMETHYLPHENOL

Bruce E. Leach, Ponca City, Okla., assignor to Conoco, Inc., Ponca City, Okla.

Filed Jan. 28, 1980, Ser. No. 116,061
Int. Cl.³ C07C *37/11*
U.S. Cl. 568—804 11 Claims

1. An improved method for the direct methylation of phenol to produce predominately ortho-cresol, 2,6-xylenol, and 2,3,6-trimethylphenol, wherein phenol is methylated over alumina catalyst to produce a product stream, the improvement comprising passing the product stream through a second methylation over a catalyst in the presence of from about 1 to about 10 mole ratio of methanol at a temperature of from 400° C. to about 500° C., and a pressure of from about atmospheric to about 5 atmospheres, wherein the catalyst is magnesium oxide promoted with amorphous metal ions selected from the group consisting of titanium, uranium, and chromium and sulfate ions.

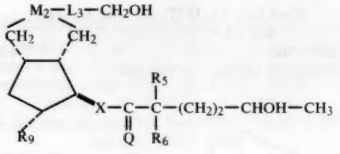
4,283,575

2-DECARBOXY-2-HYDROXYMETHYL-19-HYDROXY-6A-CARBA-PGI$_2$ COMPOUNDS

John C. Sih, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 54,811, Jul. 5, 1979, Pat. No. 4,225,508.
This application Mar. 3, 1980, Ser. No. 126,470
Int. Cl.³ C07C *49/633, 35/31*
U.S. Cl. 568—819 4 Claims

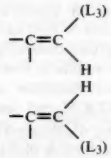
1. A prostacycline-type compound of the formula



wherein L_3 is

(1) $-(CH_2)_n-$, wherein n is one to 5, inclusive,
(2) $-(CH_2)_p-CF_2-$, wherein p is 2, 3, or 4, or
(3) $-CH_2CH=CH-$;

wherein M_2 is



wherein Q is oxo, α-H:β-H, α-OH:β-R$_4$, or α-R$_4$:β-OH,

wherein R_4 is hydrogen or alkyl of one to 4 carbon atoms, inclusive,

wherein R_5 and R_6 are hydrogen, alkyl of one to 4 carbon atoms, inclusive, or fluoro, being the same or different, with the proviso that one of R_5 and R_6 is fluoro only when the other is hydrogen or fluro;

wherein R_9 is hydrogen or hydroxyl; and

wherein X is

(1) trans—CH=CH—,
(2) cis—CH=CH—,
(3) —C≡C—, or
(4) $-CH_2CH_2-$.

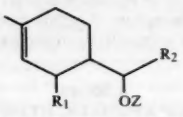
4,283,576

CYCLOHEXENEMETHANOLS

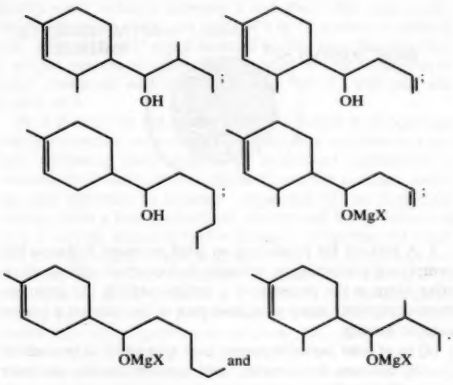
Mark A. Sprecker, Sea Bright; Frederick L. Schmitt, Holmdel; Manfred H. Vock, Locust; Joaquin F. Vinals, Red Bank, all of N.J., and Jacob Kiwala, Brooklyn, N.Y., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 52,334, Jun. 27, 1979, Pat. No. 4,221,721, which is a division of Ser. No. 8,925, Feb. 2, 1979, Pat. No. 4,197,328, which is a continuation-in-part of Ser. No. 953,128, Oct. 20, 1978, Pat. No. 4,195,099. This application Dec. 5, 1979, Ser. No. 100,528
Int. Cl.³ C07C *33/14*
U.S. Cl. 568—826 7 Claims

1. A cyclic chemical compound having the structure:



wherein R_1 is hydrogen or methyl and R_2 is C_4–C_5 alkyl or C_3 alkenyl and wherein Z is hydrogen or MgX and wherein X is selected from the group consisting of chloro, bromo and iodo, said cyclic chemical compound being selected from the group consisting of compounds having the structures:



4,283,577

METHOD FOR MAKING ETHYLENE CHLOROHYDRIN

William Jequier, Beauvais; Elie Ghenassia, Bethune; Francois Fine, Saint Laurent de Mure, and Gerard Krempf, Sainte-Foyles-Lyon, all of France, assignors to Produits Chimiques Ugine Kuhlmann, Courbevole, France

Filed Aug. 31, 1979, Ser. No. 71,676

Claims priority, application France, Sep. 29, 1978, 78 27892

Int. Cl.³ C07C *31/34*

U.S. Cl. 568—841 **5 Claims**

1. The method of making ethylene chlorohydrin comprising forming a reaction mixture of gaseous ethylene oxide and anhydrous, gaseous hydrochloric acid and maintaining the reaction mixture in a gaseous state at a temperature of from about 130° to 300° C. during the reaction period.

4,283,578

PROCESS FOR MAKING GLYCOL

Leonard Kaplan, Charleston, W. Va., assignor to Union Carbide Corporation, New York, N.Y.

Filed May 23, 1980, Ser. No. 152,608

Int. Cl.³ C07C *31/20*

U.S. Cl. 568—852 **6 Claims**

1. The process of producing ethylene glycol and/or 1,2-propylene glycol which comprises reacting a non-cyclic oxymethylene compound by the hydration or acetalization of formaldehyde with a compound containing one or more of silicon, germanium and tin bonded therein which functions as an addend in a photochemically or thermally induced radical reaction, to form a 1,2-dioxyethylene containing compound, and cleaving such 1,2-dioxyethylene containing compound to form the glycol thereof said non-cyclic oxymethylene compound being formed by the hydration or acetalization of formaldehyde.

4,283,579

PROCESS FOR PRODUCING DIOL

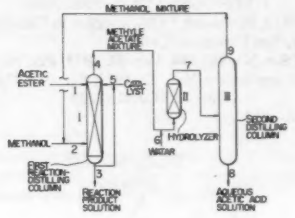
Yoshinori Yoshida, Yokohama, and Hiroshi Oka, Tokyo, both of Japan, assignors to Japan Synthetic Rubber Co., Ltd., Tokyo, Japan

Filed Sep. 6, 1979, Ser. No. 72,991

Claims priority, application Japan, Sep. 7, 1978, 53-109083

Int. Cl.³ C07C *31/20, 27/02*

U.S. Cl. 568—857 **20 Claims**



1. A process for producing a diol by reacting an acetic ester of butanediol or butenediol with methanol, which comprises (a) continuously feeding to a first reaction-distilling column from an upper part thereof a liquid acetic ester of a butanediol or butenediol, while continuously feeding methanol to the said column from a place higher than the bottom but lower than the middle part thereof, to bring both feeds into counter current gas-liquid contact in the presence of an acidic or basic catalyst, thereby allowing both feeds to react, withdrawing from the bottom a bottom stream containing a diol as major constituent, (b) continuously feeding to a hydrolyzer the distillate which is obtained from said first reaction-distilling column and which contains methyl acetate as major constituent, thus bringing said distillate into contact with water or steam in the presence of an acidic catalyst to effect hydrolysis, (c) then continuously feeding the reaction mixture from the hydrolyzer to a second distilling column, withdrawing a methyl acetate-containing methanol stream from the top of the second distilling column, and recycling said stream to a place higher than the bottom but lower than the middle part of the first reaction-distilling column, wherein the amount of methanol fed to a place higher than the bottom but lower than the middle part of the first reaction-distilling column is 1.0 to 5 moles per mole of the ester group of the acetic ester of diol.

4,283,580

PROCESS FOR THE PRODUCTION OF ALKYLENE GLYCOLS

Hiroshi Odanaka, Yokosuka; Minoru Saotome, and Toshihiko Kumazawa, both of Yokohama, all of Japan, assignors to Nippon Shokubai Kagaku Kogyo Co., Ltd., Osaka, Japan

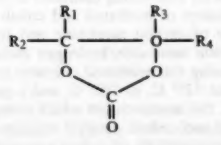
Filed Sep. 19, 1979, Ser. No. 76,843

Claims priority, application Japan, May 24, 1979, 54-63259; May 24, 1979, 54-63260

Int. Cl.³ C07C *31/30, 33/26*

U.S. Cl. 568—858 **15 Claims**

1. A process for the production of substituted or unsubstituted ethylene glycols, which comprises causing a corresponding substituted or unsubstituted ethylene carbonate of the formula



wherein, R_1, R_2, R_3 and R_4 each denote a hydrogen atom, an alkyl group having 1 to 3 carbon atoms, an aryl group having 6 carbon atoms, an alkenyl group having 2 or 3 carbon atoms or a cycloalkyl group having 3 to 6 carbon atoms, to react with water in the presence of a catalyst of at least one member selected from the group consisting of molybdenum and tungsten in metal or compound form.

4,283,581

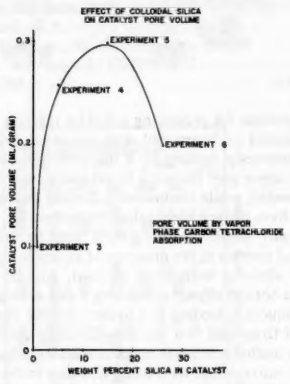
HYDROGENATION PROCESS

John B. Wilkes, Richmond, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Division of Ser. No. 881,084, Feb. 24, 1978, Pat. No. 4,199,479. This application Nov. 23, 1979, Ser. No. 97,083

Int. Cl.³ C07C *31/20*

U.S. Cl. 568—864 **3 Claims**



1. A process for hydrogenating a feedstock containing a polyglycolide derived from glycolic acid, an aliphatic monocarboxylic acid ester, an aliphatic dicarboxylic diester of an alpha-hydroxy mono-carboxylic aliphatic acid ester to the corresponding alcohol which comprises contacting said feedstock under hydrogenation conditions with a catalyst composition having a BET intrinsic surface area above about 60 m^2/g; said catalyst composition comprising from about 1 to about 99 percent by weight of a hydrogenating component, said hydrogenating component comprising copper and zinc oxide, wherein the copper is in elemental, hydroxide, carbonate, hydroxycarbonate or oxide form, and said catalyst composition comprising from about 1 to about 30 percent by weight of silica, wherein the silica is incorporated in intimate admixture with the hydrogenating component substantially to increase the activity of the catalyst composition.

4,283,582

PRE-PRESSURING METHANOL-COBALT WITH CARBON MONOXIDE IN HOMOLOGATION OF METHANOL

Miroslav Novotny, Denville, N.J., assignor to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed Mar. 6, 1978, Ser. No. 884,064

Int. Cl.³ C07C *27/00, 29/36*

U.S. Cl. 568—902 **4 Claims**

1. In a process for converting methanol to ethanol including contacting a mixture of methanol and cobalt catalyst with a gaseous mixture of carbon monoxide and hydrogen gas, in about a 1:2 carbon monoxide/hydrogen molar ratio, respectively, and allowing the combined mixtures to react at a temperature of about 175° C. to 240° C. and a pressure of about 3000–6000 psig., the improvement which comprises pre-pressurizing the methanol-cobalt catalyst mixture with an atmosphere consisting essentially of carbon monoxide in an amount corresponding to a pressure of about 10 to 1,000 psi gauge, at room temperature, or its equivalent at other temperatures, and maintaining said atmosphere of carbon monoxide while introducing said carbon monoxide/hydrogen gaseous mixture.

4,283,583

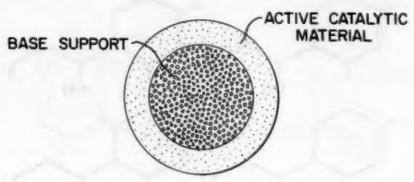
ALKYLATION OF AROMATIC HYDROCARBONS IN THE PRESENCE OF COATED ZEOLITE CATALYSTS

Louis J. Velenyi, Lyndhurst, and Serge R. Dolhyj, Parma, both of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Filed Jun. 29, 1979, Ser. No. 53,458

Int. Cl.³ C07C *2/68*

U.S. Cl. 585—467 **26 Claims**



1. A process for producing an alkyl aromatic hydrocarbon comprising contacting an aromatic hydrocarbon with an alkylating agent in the presence of a zeolite catalyst, the improvement comprising using as at least part of the catalyst a coated catalyst having:

(a) an at least partially porous base support of at least about 20 microns in diameter, said support having an outer surface, and

(b) a coating substantially on said outer surface, said coating consisting essentially of an active catalytic material containing a zeolite, said coating strongly adhering to said outer surface of said base support.

4,283,584

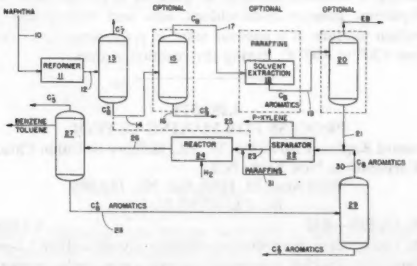
MANUFACTURE OF AROMATIC COMPOUNDS

Arthur W. Chester, and Yung F. Chu, both of Cherry Hill, N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Apr. 14, 1980, Ser. No. 140,346

Int. Cl.³ C07C *5/22, 4/12*

U.S. Cl. 585—481 **44 Claims**



1. A new use of known apparatus for simultaneously isomerizing xylenes and converting ethylbenzene to products readily separable by distillation from the mixture of C_8 aromatics by contacting a mixture of C_8 aromatics with a catalyst at conversion conditions of elevated temperature and under hydrogen pressure in a loop comprising an isomerization reactor for the contact aforesaid, distillation means for separating C_8 aromatics from lower boiling and higher boiling hydrocarbons, means to transfer hydrocarbon effluent of said isomerization reactor

to said distillation means, mixing means for mixing fresh feed C_8 aromatics containing xylenes and ethylbenzene with C_8 aromatics separated by said distillation means, a xylene separator for recovery of para xylene, means for transfer of mixed C_8 aromatics from said mixing means to said xylene separator, and means to transfer C_8 aromatics lean in para xylene from said xylene separator to said isomerization reactor, which new use comprises contacting, in the isomerization reactor of said known apparatus, a vapor phase mixture of said C_8 aromatics lean in para xylene together with 5 to 25 weight percent based on total charge to said reactor of paraffin hydrocarbon having 3 to 12 carbon atoms and having no branching in excess of one methyl group on any one carbon atom and fresh charge material containing alkyl benzenes of more than eight carbon atoms with a zeolite catalyst at a temperature of about 800°–1000° F., a pressure of less than 100 pounds per square inch and a weight hourly space velocity between 1 and about 200; said zeolite catalyst having a constraint index of 1 to 12, a silica to alumina ratio greater than 12 and a reduced acidity such that less than 2 weight percent of xylene is converted to other compounds when contacted with said catalyst at 900° F., 200 psig and LHSV of 5.

18. A process for the manufacture of aromatic hydrocarbons which comprises subjecting a hydrocarbon naphtha to catalytic reforming under conditions to convert naphthenes to aromatic hydrocarbons in a reformate reaction product, distilling said reformate to separate compounds of less than eight carbons from a heavy reformate, mixing said heavy reformate with a recycle stream hereafter defined, contacting the resultant mixture together with hydrogen and 5–25 weight percent based on said mixture of paraffin hydrocarbon having 3–12 carbon atoms and no branching in excess of one methyl group on any carbon atom at pressure above about 100 pounds per square inch and a temperature of about 800°–1000° F. with a zeolite catalyst having a constraint index of 1 to 12, a silica/alumina ratio above about 12 and reduced acidity such that less than 2 weight percent of xylene is converted to compounds other than xylene when contacted with said catalyst at 900° F., 200 psig and LHSV of 5, whereby to isomerize xylene content of said mixture and to convert ethylbenzene and alkylbenzenes of more than eight carbon atoms to benzene, toluene and xylene, distilling the product of said contacting to separate compounds of less than eight carbon atoms and compounds of more than eight carbon atoms from a C_8 fraction, recovering at least one xylene isomer from said C_8 fraction to provide a stream lean in said recovered isomer and mixing said lean stream with said heavy reformate as the recycle stream aforesaid.

4,283,585

HYDROCARBON ISOMERIZATION CATALYSTS AND PROCEDURES FOR THE PREPARATION AND USE THEREOF

Michel Legendre, and Philippe Engelhard, both of Le Havre, France, assignors to Compagnie Francaise de Raffinage, Paris, France

Division of Ser. No. 936,686, Nov. 27, 1978, Pat. No. 4,201,696, which is a continuation of Ser. No. 713,238, Aug. 10, 1976, abandoned. This application Apr. 14, 1980, Ser. No. 139,688
Claims priority, application France, Aug. 13, 1975, 75 25224
Int. Cl.³ C07C *5/22, 5/13*
U.S. Cl. 585—482 **8 Claims**

1. A process for the isomerization of hydrocarbons comprising contacting said hydrocarbons under conditions favoring isomerization with hydrogen and a catalyst consisting essentially of a carrier which is comprised of at least one refractory metal oxide, including a halogen element present in combined form, and deposited on said carrier:

from about 0.02 to 2 wt. %, based on the weight of the carrier, of at least one platinum-group metal;

from about 0.005 to 8 wt. %, based on the weight of the carrier, of at least one second element from the group consisting of titanium, zirconium, tungsten and molybdenum; and

at least one metal halide based on the weight of the carrier, selected from the group consisting of aluminum trichloride, aluminum tribromide, ferric chloride, ferric bromide, beryllium dichloride, zirconium chloride and mixtures thereof,

the total halogen content of said catalyst being 0.1 to 15 wt. % of the total weight of the catalyst,

wherein at least one of said platinum group metal and at least one second element are introduced onto the carrier by impregnation and thereafter at least one metal halide is introduced onto the carrier by sublimation.

4,283,586

PROCESS FOR DIMERIZING OR CODIMERIZING LOWER MONOOLEFIN

Masahito Yoshimura; Satoshi Hoshiyama; Hideki Takamatsu; Hiroshi Kobayashi, and Shinichiro Takigawa, all of Funabashi, Japan, assignors to Nissan Chemical Industries, Ltd., Tokyo, Japan

Filed Apr. 4, 1980, Ser. No. 137,260
Claims priority, application Japan, Apr. 11, 1979, 54-43759
Int. Cl.³ C07C *2/24, 2/02*
U.S. Cl. 585—512 **3 Claims**

1. In a process for dimerizing or codimerizing a C_2–C_8 monoolefin in the presence of a catalyst comprising an organoaluminum halide and a nickel compound or nickel metal, an improvement characterized in that the catalyst further comprises at least one of aliphatic, cycloaliphatic and aromatic polyols.

4,283,587

ADSORPTIVE SEPARATION OF AROMATIC ISOMERS

Donald H. Rosback, deceased, late of Elmhurst, Ill., and by Janice M. Gillespie, executrix, Bartlett, Ill., assignors to UOP Inc., Des Plaines, Ill.

Filed Jun. 16, 1980, Ser. No. 160,053
Int. Cl.³ C07C *7/13*
U.S. Cl. 585—828 **8 Claims**

1. In a process for separating aromatic hydrocarbons from a feed containing a mixture of aromatic isomers including para-isomer, which process comprises contacting, at adsorption conditions, said feed with a Type X or Type Y zeolite which has been cation exchanged at exchangeable cationic sites with cations which make the zeolite selective for the para-isomer, to effect the selective adsorption of said para-isomer by said adsorbent, the improvement which comprises utilizing in said process a Type X or Type Y zeolite which has been treated with an alkyl amine hydrochloride or alkyl amines.

4,283,588

AUTOMATIC GUIDANCE SYSTEM FOR RADIATION-RESPONSIVE SYSTEMS

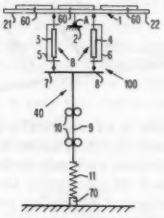
Helmut Zitzelsberger, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Sep. 4, 1979, Ser. No. 72,096

Claims priority, application Fed. Rep. of Germany, Sep. 27, 1978, 2842084

Int. Cl.³ H01L *31/00*

U.S. Cl. 136—246 **5 Claims**



1. Apparatus for the automatic alignment of a radiation responsive system according to the position of a movable radiation source comprising:

(1) a rocker means carrying said radiation responsive system, said rocker means being rotatable about an axis which intersects with the plane of movement of said movable radiation source,

(2) a platform means mounted for reciprocable translation in a direction perpendicular to said axis,

(3) two heat expansion bodies positioned between said rocker and platform means for exposure to said radiation source, said bodies being mounted in spaced-apart fashion on opposed sides of said axis, each body having first and second end portions linearly, longitudinally movable in response to thermal expansion forces occurring within the heat expansion body,

(4) means pivotally connecting respective first ends of said heat expansion bodies to said rocker means and respective second ends of said heat expansion bodies to said platform such that linear movements of said first and second ends serve to rotate said rocker means about said axis and translate said platform means, and

(5) shade means for shading each body from exposure to said radiation source such that relative thermal expansion forces are formed in said bodies.

5. The apparatus according to claim **1**, wherein said radiation responsive system comprises an array of solar cells.

4,283,589

HIGH-INTENSITY, SOLID-STATE SOLAR CELL

Roy Kaplow, Newton, and Robert I. Frank, Lexington, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

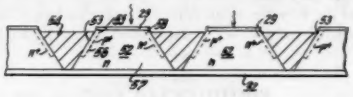
Continuation of Ser. No. 901,331, May 1, 1978, abandoned, which is a continuation-in-part of Ser. No. 689,989, May 26, 1976, Pat. No. 4,110,122. This application Jul. 10, 1979, Ser. No. 56,259

The portion of the term of this patent subsequent to Aug. 29, 1995, has been disclaimed.

Int. Cl.³ H01L *31/06*

U.S. Cl. 136—249 **13 Claims**

1. A semiconductor solar cell, comprising a substrate body of a first conductivity type and having spaced parallel exposure-side and underside body surfaces, one of said surfaces having a plurality of laterally spaced elongate grooves with opposed inclined sidewalls which diverge in the direction of said one surface, thereby defining plural spaced, elongate, parallel units with sidewalls which converge in the direction of said one surface, the maximum effective lateral width of the exposure side of each unit being within the range up to ten mils, one sidewall of each unit comprised of a localized region of a second conductivity type, said localized region being diffused into said one sidewall and defining with adjacent first conductivity type body material a photovoltaic junction plane



which is parallel to the sidewall surface at said region, the other sidewall of each unit being of first conductivity type, and electric-circuit connection means including first conductive means having ohmic contact with said second conductivity-type regions and second conductive means having ohmic contact with regions of said first conductivity type.

4,283,590

METHOD FOR PRODUCTION OF SOLAR CELLS AND SOLAR CELLS PRODUCED THEREBY

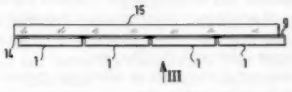
Gerhard Bilger, Stuttgart; Gert Hewig, Steinenbronn; Fritz Pfisterer, Lauffen, and Hans-Werner Schock, Herrenberg, all of Fed. Rep. of Germany, assignors to Werner H. Bloss, Winterbach, Fed. Rep. of Germany

Filed Jul. 20, 1978, Ser. No. 926,433

Claims priority, application Fed. Rep. of Germany, Jul. 21, 1977, 2732933

Int. Cl.³ H01L *31/06, 31/18*

U.S. Cl. 136—251 **32 Claims**



1. A method for the production of closed encapsulated solar cells with a thin film PN heterojunction, having a cadmium sulfide layer deposited on an electrically conductive support and a cuprous sulfide layer chemically produced on the cadmium sulfide layer, comprising the steps of depositing a layer of cadmium sulfide on an electrically conductive support, chemically producing a cuprous sulfide layer on the cadmium sulfide, thereby forming a lower part comprising the electrically conductive support, the layer of cadmium sulfide, and the layer of cuprous sulfide; depositing an adhesive material on a cover glass member, forming a conductive grid on the adhesive material, the cover glass member, adhesive material, and conductive grid forming an upper part; and joining the upper part with the lower part by means of said adhesive material, having the electrically conductive support and cover glass member be outer surfaces of the joined member, whereby the interface between the upper part and the lower part is formed between the electrically conductive grid and the cuprous sulfide layer, to form closed encapsulated solar cells.

30. Closed encapsulated solar cells comprising:

(a) an upper part comprising a cover glass member having adhesively attached thereto a plurality of individual electrically conductive grids;

(b) a plurality of lower parts, each lower part comprising a structural part, an electrically conductive support on the structural part, a cadmium sulfide layer on the electrically conductive support, and a cuprous sulfide layer on the cadmium sulfide layer;

(c) wherein the plurality of individual electrically conductive grids attached to the cover glass member are arranged in at least one row, with a lower part associated with each grid and arranged with respect to its associated grid such

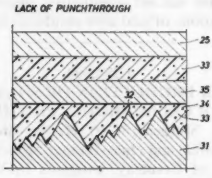
that the electrically conductive support of each lower part contacts the grid associated with the adjacent lower part in the row, and wherein on one side of the cover glass an edge strip of the outer grids is exposed as a contact, while on the other side an edge strip of an electrically conductive support is exposed as a contact, the lower part and upper part being joined such that the cover glass member and the structural part form the outer surface of the solar cells, whereby closed encapsulated solar cells are formed.

4,283,591

PHOTOVOLTAIC CELL

Karl W. Böer, Kennett Square, Pa., assignor to SES, Incorporated, Newark, Del.

Filed May 22, 1980, Ser. No. 152,450
Int. Cl.³ H01L *31/06, 31/18*
U.S. Cl. 136—256 **26 Claims**



14. A photovoltaic cell having improved stability comprising:

(a) an electrically conductive first electrode;

(b) a film of cadmium chalcogenide contacting said first electrode;

(c) a film of copper chalcogenide contacting said cadmium chalcogenide and forming a p-n junction therewith;

(d) a layer of a polymer composition containing electrically conductive particles in electrical contact with a portion of said copper chalcogenide film; and

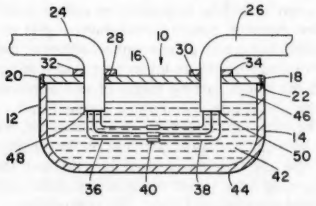
(e) a second metal electrode in electrical contact with said polymer layer but not in physical contact with said copper chalcogenide layer.

4,283,592

FILLED ELECTRICAL SPLICE CASE

Kenneth W. Brownell, Jr., Asheville, N.C., assignor to Akzona Incorporated, Asheville, N.C.

Filed Aug. 23, 1979, Ser. No. 69,023
Int. Cl.³ H02G *9/00*
U.S. Cl. 174—21 R **10 Claims**



1. An electrical splice case including a container housing electrical wire splices, entry holes located above the position of the splices; the entry holes for receiving electrical cable; the improvement comprising:

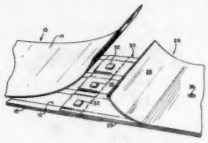
a fluid sealant received in said container and covering said splices, said fluid sealant being substantially a silicone oil having a specific gravity greater than 1, whereby if water should enter said container, the water will remain on top of said fluid sealant, placing hydraulic pressure on said fluid sealant, thereby increasing the intimacy of the seal on the splices.

4,283,593

MULTICONDUCTOR CABLE

Raymond F. Piasecki, Leonardo, and Ted L. C. Kuo, Fanwood, both of N.J., assignors to Thomas & Betts Corporation, Raritan, N.J.

Filed May 25, 1979, Ser. No. 42,544
Int. Cl.³ H02G *3/26;* **H01B** *7/08, 7/36*
U.S. Cl. 174—36 **27 Claims**



16. In combination, in an electrical wiring system:

(a) first and second electrical cables having mutually overlapping end portions, each said cable having a plurality of flat conductors in an electrically insulative casing;

(b) electrical connector means for mutually securing said cable end portions and providing electrical connection between said flat conductors of said cables;

(c) a first electrically conductive member electrically connected to and extending lengthwise with said first cable, overlying said casing of said first cable and having successive lengthwise extents respectively secured and unsecured to said first cable; and

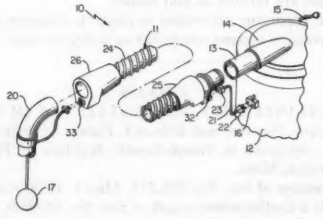
(d) a second electrically conductive member electrically connected to and extending lengthwise with said second cable, overlying said casing of said second cable and having successive lengthwise extents respectively secured and unsecured to said second cable, at least one of such first and second electrically conductive members being in overlying disposition to said end portions of said first and second electrical cables and said electrical connector means.

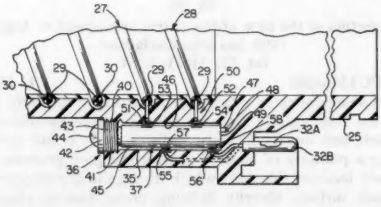
4,283,594

VACUUM APPARATUS HAVING PROTECTIVE DEVICE FOR OPERATOR AND METHOD

M. John Somers, Dayton, Ohio, assignor to Dayco Corporation, Dayton, Ohio

Filed Dec. 17, 1979, Ser. No. 104,617
Int. Cl.³ A47L *9/24, 9/28*
U.S. Cl. 174—47 **16 Claims**





11. In a vacuum hose assembly for a canister type vacuum

cleaner; said vacuum hose assembly comprising a vacuum hose; a pair of hose connectors provided at opposite end portions of said hose; and a pair of wires extending along said vacuum hose and serving the dual purpose of electrical conductors and hose reinforcing wires; and an electrical connector associated with each hose connector and having said dual-purpose wires connected thereto; the improvement comprising, a chamber in at least one of said hose connectors, readily opened and closed access means for said chamber, a protective cartridge within said chamber, said cartridge being adapted to be easily installed within and removed from said chamber, electrical connection means electrically connecting said cartridge between an associated electrical connector and said wires, said cartridge being sensitive to and serving to detect practically every type of fault capable of causing injury to humans and operating to interrupt the electrical circuit therethrough upon detection of a fault, and means for installing said cartridge within said chamber in only one operative position at which said cartridge enables operation of a cleaning instrument supplied with electrical power by said wires.

4,283,595

HIGH VOLTAGE CONDUCTOR TERMINAL

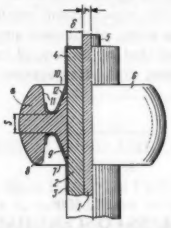
Oleg V. Anosov; Alexandr G. Mirzoev, and Jury V. Obraztsov, all of Moscow, U.S.S.R., assignors to Lackenbach, Lilling & Siegel, Scarsdale, N.Y.

Continuation-in-part of Ser. No. 33,474, Apr. 26, 1979, abandoned, which is a continuation of Ser. No. 808,120, Jun. 20, 1977, abandoned. This application Nov. 19, 1979, Ser. No. 95,666

Claims priority, application U.S.S.R., Jun. 25, 1976, 2377112

Int. Cl.³ H02G *150/064;* **H01B** *17/42*

U.S. Cl. 174—73 R **6 Claims**



1. A high voltage terminal for a conductor having insulation, comprising:

a first screen made as a coating of an electrically conductive material on an outer surface of said insulation;

a second screen made as a coating of an electrically conductive material on an outer surface of said insulation near an end of said conductor, said second screen being in contact with said end of said conductor;

at least one insulation bush arranged near said end of said conductor and between said first and second screens, said end of said conductor extending beyond a first butt end of said insulation bush, said insulation bush being in contact with said insulation of said conductor and being made of a material having a permittivity approximately equal to the permittivity of the material of said insulation of said conductor, said first butt end and a second butt end of said insulation bush having annular toroid-shaped grooves, the ratio of the minimum distance between said grooves of said butt ends to the thickness of said insulation of said conductor being within the range of about 0.2 to 5;

a third screen made as a coating of an electrically conductive material on an outer surface of said groove of said first butt end of said insulation bush, said third screen being in contact with said second screen; and

a fourth screen made as a coating of an electrically conductive material on an outer surface of said groove of said second butt end of said insulation bush, said fourth screen being in contact with said first screen.

4,283,596

CONNECTOR AND CONNECTION METHOD

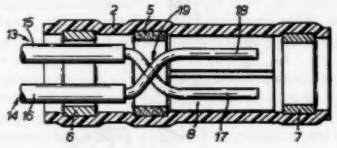
Lajos J. Vidakovits, Mountain View, Calif., and Didier J. M. Watine, Maisons Laffitte, France, assignors to Raychem Pontoise S.A., Saint-Ouen l'Aumone, France

Filed May 7, 1979, Ser. No. 36,368

Claims priority, application United Kingdom, May 9, 1978, 18451/78

Int. Cl.³ H01R *4/00*

U.S. Cl. 174—84 R **35 Claims**



1. In a method for electrically connecting together two elongate electrical conductors, the improvement comprising the steps of selecting a heat-recoverable sleeve having an insert disposed therein to locate the conductors, the insert being infusible and substantially dimensionally stable at the heat-recovery temperature of the sleeve and having two separate compartments, introducing the conductors into the insert in the sleeve so that the conductors are enclosed within respective ones of the compartments and are laterally spaced from each other, and applying heat to recover the sleeve.

4,283,597

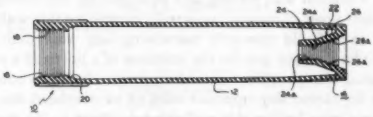
WIDE-RANGE INSULATING/SEALING SLEEVE

James J. Cooper, Jr., St. Louis, Mo., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Mar. 19, 1979, Ser. No. 21,929

Int. Cl.³ H01B *17/58;* **H01R** *13/52*

U.S. Cl. 174—138 F **7 Claims**



7. A sleeve for sealing and insulating the connection of an insulated power distribution system cable to an insulated bus bar comprising, in combination: a generally cylindrical hollow body of elastomeric material having a plurality of circumferentially extending and axially closely spaced grooves at one end thereof and on the inner surface thereof for stretchingly and sealingly engaging an insulated projecting terminal portion of said bus bar, the other end of said body having a reentrant portion including an axially inner tubular portion and a flared portion joining said tubular portion and opening outwardly toward and terminating adjacent the edge of said other end of said body, the internal surfaces of said tubular and flared portions having a plurality of circumferentially extending and axially spaced grooves for sealingly engaging an insulated portion of said cable, wherein the diameters of the grooves along said tubular portion are substantially constant and wherein the diameters of the grooves along said flared portion increase in the axially outward direction, with the largest diameter groove being spaced apart from said edge thereby forming a funnel guide therebetween, wherein said flared portion joins said tubular portion at a point which is substantially spaced from the axially inner end of said funnel guide.

4,283,598

LINE POST INSULATOR WITH SWINGING STIRRUP AND CLAMPING JAWS FOR OVERHEAD LINES OF MORE THAN 1000 VOLTS

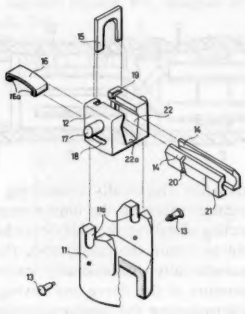
Janos Fridrich, Budapest; Zoltan Hetesi, Hosszuheteny; Gusztav Kisteleki, Pecs; Laszlo Misangyi, Pecs; Emil Szegletes, Pecs, and Jozsef Szabo, Dunaujvaros, all of Hungary, assignors to Finomkeramiaipari Müvek, Budapest, Hungary

Filed Aug. 23, 1979, Ser. No. 68,902

Claims priority, application Hungary, Sep. 12, 1978, FI-682

Int. Cl.[3] H01B *7/16*

U.S. Cl. 174—169 **10 Claims**



1. A line post insulator for overhead lines designed for operating voltages higher than 1000 volts, said line post insulator comprising an insulator cap, a swinging stirrup located in said insulator cap, said swinging stirrup comprising a stirrup body portion and a pair of laterally extending pins integral therewith, said insulator cap including a central, longitudinal hole therethrough for receiving said stirrup body portion and a pair of transverse recesses for locating said laterally extending pins whereby said swinging stirrup is adapted to pivot about a transverse axis defined by the axes of said pins, said swinging stirrup including a longitudinal, central cavity therethrough defined by a pair of opposed, downwardly narrowing side walls, a bottom wall joining said downwardly narrowing side walls and a pair of opposed upwardly narrowing side walls, the upper end of said upwardly narrowing side walls defining a longitudinal, upper gap for the insertion of a line, and a pair of elongated clamping jaws extending longitudinally within said cavity for supporting opposite sides of an overhead line, said clamping jaws having side walls that conform to the shape of said downwardly narrowing side walls of said cavity, whereby an overhead line is can be clamped between said clamping jaws by the pressing force occurring between said jaws when said jaws are wedged in said cavity due to the weight of such line.

4,283,599

METHOD AND APPARATUS FOR SECURING DATA TRANSMISSIONS

Martin M. Atalla, Menlo Park, Calif., assignor to Atalla Technovations, Sunnyvale, Calif.

Continuation-in-part of Ser. No. 3,898, Jan. 16, 1979, which is a continuation-in-part of Ser. No. 902,444, May 3, 1978. This application Feb. 5, 1979, Ser. No. 9,532

Int. Cl.[3] H04L *9/00*

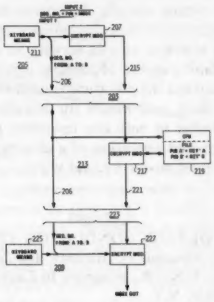
U.S. Cl. 178—22.1 **5 Claims**

1. The method of securing a transaction between two entities at first and second spaced locations using identification information about the two entities stored at an intermediate location, the method comprising:

encoding in logical combination at the first location the identification information about one entity and data pertaining to the transaction to produce an encoded signal for transmission to the intermediate location with information about the two entities;

decoding the encoded signal received at the intermediate location with respect to the logical combination used at the first location using information about said one entity stored thereat to provide the data pertaining to the transaction for re-encoding using information stored thereat about the other of the two entities;

encoding in a logical combination at the intermediate location the data pertaining to the transaction decoded thereat and identification information about the other of the two entities stored thereat to produce an encoded signal for transmission to the second location with information about at least the other of the two entities; and



decoding the encoded signal received at the second location with respect to the logical combination used at the intermediate location using information about the other of the two entities provided at the second location to produce the data pertaining to the transaction.

4,283,600

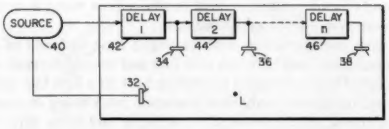
RECIRCULATIONLESS CONCERT HALL SIMULATION AND ENHANCEMENT SYSTEM

Joel M. Cohen, P.O. Box 135, Brookline, Mass. 02146

Filed May 23, 1979, Ser. No. 41,705

Int. Cl.[3] H04R *3/00*

U.S. Cl. 179—1 J **3 Claims**



3. A method of enhancing original concert hall ambience in a small listening area without creating ascertainable echoes, without signal recirculation and without creating booming or introducing tonal discoloration comprising the steps of:

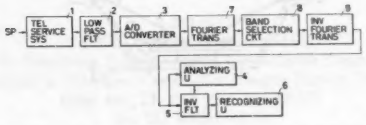
acoustically reproducing at one location in the listening area sound from an original sound source; and

acoustically reproducing without recirculation at a plurality of locations in the listening area sound from the original source, all of which is sequentially delayed such that distinct echoes are not discernible; such that the cumulative delay exceeds that at which echoes are discernible; and such that phase cancellations are avoided.

4,283,601
PREPROCESSING METHOD AND DEVICE FOR SPEECH RECOGNITION DEVICE

Akira Nakajima, Hachioji; Akira Ichikawa, Kokubunji, and Kazuo Nakata, Kodaira, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 8, 1979, Ser. No. 37,026
Claims priority, application Japan, May 12, 1978, 53-55556
Int. Cl.³ G10L *1/00*
U.S. Cl. 179—1 SD **6 Claims**

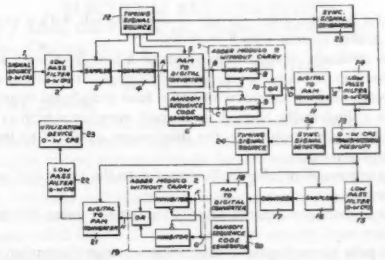


1. A preprocessing method for a speech recognition device having input means for receiving a speech signal which has been transmitted through a transmission system having a certain transmission band, preprocessing means including an inverse filter for preprocessing the input speech signal and recognition means for recognizing the input speech signal from said preprocessing means; comprising the first step of Fourier-transforming the speech signal from said input means to obtain a frequency spectrum, the second step of extracting only a frequency spectrum relating to the frequency spectrum of said transmission band from said frequency spectrum obtained at said first step and continuously rearranging the extracted frequency spectrum from 0 Hz, and the third step of subjecting to inverse Fourier transform the signal corresponding to the rearranged frequency spectrum extracted at said second step, the fourth step of analyzing a signal obtained at said third step to obtain a specified characteristic parameter and the fifth step of setting a characteristic inverse to said characteristic parameter obtained by said fourth step in said inverse filter and passing the input speech signal through said inverse filter, thereby obtaining the input speech signal for said recognition means.

4,283,602
CRYPTOGRAPHICALLY SECURE COMMUNICATION SYSTEM

Robert T. Adams, Short Hills, N.J.; Paul E. Ahrens, Hicksville, N.Y., and John Granlund, Short Hills, N.J., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 555,074, Jun. 3, 1966. This application Sep. 23, 1968, Ser. No. 761,879
Int. Cl.³ H04K *1/02*
U.S. Cl. 179—1.5 R **10 Claims**



1. A cryptographically secure communication system employed with a transmission medium having a given low frequency pass band and a predetermined bandwidth comprising:

a source of analog signal confined to said given pass band and said predetermined bandwidth;

first means coupled to said source to produce amplitude sample pulses from said analog signal at a given rate related to at least twice said predetermined bandwidth, each of said sample pulses having a discrete amplitude equal to one of a predetermined number of discrete amplitude levels;

second means to provide a first sequence of signals representing randomly and with substantially equal probability said predetermined number of discrete amplitude levels, said first sequence of signals being coincident with said sample pulses;

third means coupled to said first means and said second means responsive to said sample pulses and said first sequence of signals to encrypt said sample pulses;

said transmission medium;

fourth means coupled between said third means and said transmission medium to convert said encrypted sample pulses to an encrypted analog signal confined to said given pass band and said predetermined bandwidth for propagation through said transmission medium;

fifth means coupled to said transmission medium to produce encrypted amplitude sample pulses from said encrypted analog signal at said given rate, each of said encrypted sample pulses having a discrete amplitude equal to one of said predetermined number of discrete amplitude levels;

sixth means synchronous with said second means to provide a second sequence of signals identical to said first sequence of signals, said second sequence of signals being coincident with said encrypted sample pulses;

seventh means coupled to said fifth means and said sixth means responsive to said encrypted sample pulses and said second sequence of signals to decrypt said encrypted sample pulses and recover said sample pulses;

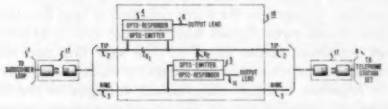
eighth means coupled to said seventh means to convert said sample pulses to said analog signal confined to said given pass band and said predetermined bandwidth; and

ninth means coupled to said eighth means having said given pass band and said predetermined bandwidth to utilize said analog signal.

4,283,603
ON-HOOK/OFF-HOOK STATUS CHECK CIRCUIT

Ralph L. Cerbone, Indianapolis, Ind., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Feb. 19, 1980, Ser. No. 122,431
Int. Cl.³ H04M *1/24*
U.S. Cl. 179—18 FA **7 Claims**



1. An on-hook/off-hook status check circuit, adapted to be connected between the tip and ring leads of a telephone subscriber loop and the telephone station set

characterized in that

the circuit provides a predetermined sequence of outputs identifying the switchhook status of the telephone station set, the circuit comprising

a first means connectable in series with the telephone subscriber loop for providing a first output responsive to the flow of current

a second means connectable across the telephone subscriber loop for providing a second output responsive to the flow of current and

means for sequentially activating the first means before the second means such that

upon activation of the first and second means, a sequence of the first output before the second output identifies the off-hook status of the telephone station set and

a sequence of the second output before the first output or

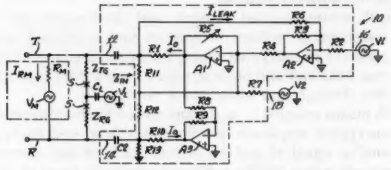
simultaneously with the first output identifies the on-hook status of the telephone station set.

4,283,604

CURRENT SOURCE CIRCUITS WITH COMMON MODE NOISE REJECTION

Charles W. Chambers, Jr., Downers Grove, Ill., assignor to Tellabs, Inc., Lisle, Ill.

Filed Jun. 4, 1979, Ser. No. 45,274
Int. Cl.³ H04M *1/76*
U.S. Cl. 179—70 **26 Claims**



1. A current source for interfacing between a source of voltage signals which vary in value and a two-wire transmission system on which longitudinal voltages are at least occasionally present, such as the tip and ring leads of a telephone pair, for generating a controlled current flow through the wires in accordance with the value and polarity of voltage signals from the source of voltage signals and for providing common mode rejection to longitudinal voltages on the wires, said current source having first and second outputs each for connection with a separate one of the wires and comprising first and second voltage amplifier means each having an input, an output and an output impedance connected between the amplifier means output and a separate one of said current source outputs, said first voltage amplifier means output being connected through its output impedance with said current source first output; means for connecting said first amplifier means output with said second amplifier means input so that voltage signals at said first amplifier means input control the voltages generated at each of said amplifier means outputs; feedback means coupled between said current source first output and said first amplifier means input; circuit means coupled between said current source outputs and said first amplifier means input, said feedback means and said circuit means coupling signals at said current source outputs from the wires of the transmission system to said first amplifier means input, said feedback means and said circuit means in response to equal longitudinal voltages on the wires coupling to said first voltage amplifier means input signals which cancel to zero at said first voltage amplifier means input so that said first and second voltage amplifier means do not generate voltages at their outputs in response to equal longitudinal voltages on the wires, whereby said current source has common mode rejection to equal longitudinal voltages on the wires; and means for coupling the source of voltage signals with said first voltage amplifier means input to generate at said current source outputs and through the wires current flows having values and directions in accordance with the value and polarity of voltage signals from the source of voltage signals.

4,283,605

PIEZOELECTRIC SPEAKER

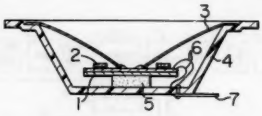
Shoji Nakajima, Neyagawa, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Apr. 2, 1979, Ser. No. 26,539
Claims priority, application Japan, Apr. 7, 1978, 53-46203[U]; May 31, 1978, 53-74642[U]; Nov. 1, 1978, 53-135585
Int. Cl.³ H04R *17/00*
U.S. Cl. 179—110 A **10 Claims**

1. A piezoelectric speaker comprising

a piezoelectric vibrator having first and second opposite surfaces, said vibrator vibrating in a planar bending mode so as to define a pair of spaced concentric nodal lines located on the first surface of said vibrator at the first overtone thereof;

a damping ring having a mass which is not greater than one-third of the mass of said piezoelectric vibrator affixed to the first surface of said vibrator only in the annular space between said first and second concentric nodal lines, said damping ring dampening vibrations at said first overtone;



a conical diaphragm having a central part thereof affixed to the central portion of the first surface of said vibrator, the part of said diaphragm affixed to said vibrator being surrounded by said damping ring;

a housing surrounding said piezoelectric vibrator, damping ring and conical diaphragm; and

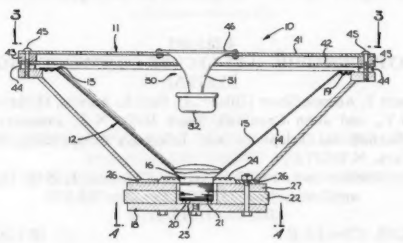
an acoustic resistive member attached to said housing and the second surface of said piezoelectric vibrator for supporting said vibrator, said acoustic resistive member having a diameter nearly equal to the diameter of the smaller of said nodal lines.

4,283,606

COAXIAL LOUDSPEAKER SYSTEM

Marshall D. Buck, Los Angeles, Calif., assignor to Cerwin Vega, Inc., Arlea, Calif.

Filed Jul. 16, 1979, Ser. No. 57,821
Int. Cl.³ H04R *7/00, 9/06*
U.S. Cl. 179—115.5 H **8 Claims**



1. An acoustic filter for use in combination with a coaxial loudspeaker system which includes:

a. a conically shaped diaphragm of a low frequency loudspeaker having a front peripheral edge, an external sidewall, an internal sidewall and a base peripheral edge;

b. a cylindrically shaped voice coil member which is mechanically coupled to the diaphragm adjacent to its peripheral edge;

c. a voice coil mechanically coupled to the voice coil member;

d. a ring-shaped magnet disposed about the voice coil member;

e. a pole piece disposed within the voice coil member with the ring-shaped magnet and the pole piece creating a magnetic gap therebetween;

f. a frame that includes a conically shaped portion with an internal sidewall which receives the conically shaped diaphragm and a base portion which receives the ring-shaped magnet, the voice coil member and the pole piece;

g. a centering spider which mechanically couples the base

portion of the frame to the base peripheral edge of the diaphragm; and

h. a high frequency loudspeaker disposed in front of the conically shaped diaphragm, said acoustic filter comprising:

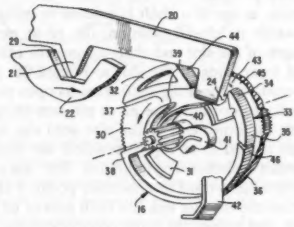
a. a pair of parallel perforated sheets which are separated from each other a suitable distance and which are joined together at their peripheries in any appropriate manner so that they enclose an airspace therebetween in order to form a single section acoustic filter.

4,283,607

CAM CONTROL MECHANISM

Ben W. Brightman, Scott Township, Vanderburgh County, Ind., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Filed Aug. 23, 1979, Ser. No. 68,971
Int. Cl.³ H01H *43/10*
U.S. Cl. 200—38 R **19 Claims**



1. In a cam operated control mechanism having a control cam, a cam follower, and means for biasing said cam follower into engagement with said control cam, the improvement comprising:

means defining a first cam surface on said control cam for engaging a portion of said cam follower;

means defining a second cam surface on said control cam and being spaced from said first cam surface for effecting movement of said cam follower as it sequentially engages said first and second cam surfaces;

a movable gate member formed within one of said first and second cam surfaces to permit movement of said cam follower through said one of said surfaces; and

means for urging said cam follower against said movable gate member to move said follower from engagement with one said cam surface into engagement with the other cam surface.

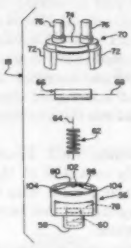
4,283,608

ELECTRICAL KEYLOCK SWITCH

Earl J. Genz, Des Plaines, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Jan. 16, 1980, Ser. No. 112,667
Int. Cl.³ H01H *27/00*
U.S. Cl. 200—44 **10 Claims**

1. A keylock switch comprising a base which supports a pair of electrical terminals that pass therethrough, said electrical terminals having enlarged heads that are spaced from said base to form gaps therebetween and are aligned along a contact line that intersects said heads, a retaining cup comprising an elongated retaining cavity, a cylindrical boss that has an inner circular blind hole and a securing means spaced from said boss, a coiled spring having an elongated axis, one end of which is inserted into said blind hole, an elongated electrically conductive rod, having an elongated axis that is substantially normal to the axis of said coiled spring, which contacts the other end of said spring and which is retained in said retaining cavity so that said axis of said rod will overlap said contact line and said rod will contact said heads when said retaining cup and said rod are rotated relative to said base so that said switch is in the closed position, said securing means being rotated into supporting engagement with said heads when said retaining cup and said rod are rotated relative to said base so that said switch is in the open position and said rod is positioned substantially



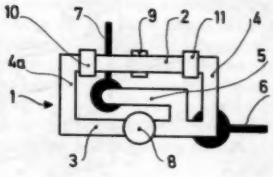
normal to said contact line whereby a complete switch assembly, that may be transported as a unit, is provided in the open switch position.

4,283,609

ELECTRICAL SNAP-ACTION SWITCH

Rudolf Schadow, Berlin, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed Aug. 21, 1978, Ser. No. 935,636
Int. Cl.³ H01H *13/52*
U.S. Cl. 200—67 D **3 Claims**



1. An electrical snap-action switch comprising a snapping spring made of sheet metal divided into at least two strips extending in parallel with one another, with the strips being joined to one another at both ends by cross webs, and of which at least one strip is unshortened, and at least one other strip is shortened by means of a bending, with the sheet metal carrying at least one electric contact cooperating with an opposite contact arranged on a flat base, and in which there is provided an actuating device by which the unshortened strip can be caused to snap over, and including means for clamping said other strip between abutments so that said bending is thereby provided, and wherein the abutments are formed by the switch housing.

4,283,610

OPERATOR FOR A CIRCUIT INTERRUPTER AND DISCONNECT SWITCH COMBINATION

Kazuo H. Date, Torrance, Calif., and Ronald A. Wainio, Milwaukee, Wis., assignors to McGraw-Edison Company, Rolling Meadows, Ill.

Filed Mar. 9, 1979, Ser. No. 19,059
Int. Cl.³ H01H *33/12, 9/38*
U.S. Cl. 200—146 R **9 Claims**

1. A circuit interrupter and disconnect switch combination, which comprises:

a support structure;

a first operating shaft, having a longitudinal axis, which is rotatably mounted to the support structure of rotation

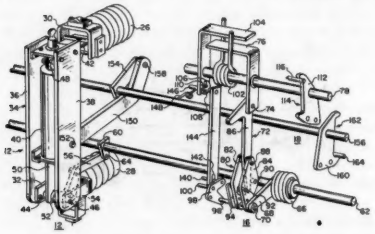
about its longitudinal axis between an open and a closed position;

a circuit interrupter mounted to the support structure and including a first electrically conductive interrupting contact member and a second electrically conductive interrupting contact which is movable relative to the first interrupting contact member between a closed position at which the second interrupter contact member engages the first interrupter contact member, and an open position at which the second interrupter contact member is disengaged and spaced from the first interrupting contact member;

an interrupter operating shaft, having a longitudinal axis, which is rotatably mounted to the support structure in spaced parallel arrangement with the first shaft for rotation about its longitudinal axis between a closed position and an open position;

interrupter connecting means, disposed between the second contact member of the circuit interrupter and the interrupter operating shaft, for moving the second contact member to its closed position when the interrupter operating shaft is rotated to its closed position, and for moving the second contact member to its open position when the interrupter operating shaft is rotated and its open position;

an interrupter operating means, connected between the first shaft and the interrupter operating shaft, for quickly rotating the interrupter operating shaft between its open and closed positions, wherein, as the first shaft is rotated from its open position toward its closed position, the interrupter



operating means quickly rotates the interrupter operating shaft from its open position to its closed position at a first intermediate position of the first shaft near the closed position of the first shaft, and wherein, as the first shaft is rotated from its closed position toward its open position, the interrupter operating means quickly rotates the interrupter operating shaft from its closed position to its open position at a second intermediate position of the first shaft near the closed position of the first shaft;

a disconnect switch which is mounted to the support structure, and which includes a first electrically conductive disconnect contact member, and a second electrically conductive disconnect contact member which is movable relative to the first disconnect contact member between a closed position at which the second disconnect contact member engages the first disconnect contact member, and an open position at which the second disconnect contact member is disengaged and spaced from the first disconnect contact member, one of the disconnect contact members being electrically connected to one of the interrupting contact members of the circuit interrupter;

a disconnect operating shaft, having a longitudinal axis, which is rotatably mounted to the support structure for rotation about its longitudinal axis between a closed position and an open position, in spaced parallel arrangement with the interrupter operating shaft;

connecting means, disposed between the second disconnect contact member and the disconnect operating shaft, for moving the second disconnect contact member to its closed position when the disconnect operating shaft is rotated to its closed position, and moving the second disconnect contact member to its open position when the disconnect operating shaft is rotated to its open position;

a first lever affixed to the first shaft;

a second lever affixed to the disconnect operating shaft;

a driving link for connecting the disconnect operating shaft to be rotated between its open and closed positions as the first shaft is rotated between its corresponding open and closed positions, the driving link having a first end which is pivotally connected to one of the first and second levers, and an opposite second end which defines an elongated opening, or slot, through the driving link having an outer end and an inner end which define the length of the slot;

a pivot pin, carried by the other of the first and second levers, which extends through the slot of the driving link, the pin being disposed against one of the outer and inner ends of the slot when the first shaft is disposed in its open position, and the driving link being moved over and beyond a toggle position when the first shaft is rotated to its closed position;

wherein, as the first shaft is rotated from its open position towards its closed position, the pivot pin traverses the length of the slot and abuts against the other of the outer and inner ends of the slot to initiate the rotation of the disconnect operating shaft from its open position towards its closed position, the pivot pin remaining in abuttment with the other end of the slot until the driving link has been moved to its toggle position, the second disconnect contact member engaging the first disconnect contact member at a third intermediate position of the first shaft before the driving link has been moved to its toggle position, and before the interrupter operating shaft has been rotated from its open position to its closed position by the interrupter operating means at the first intermediate position of the first shaft which is disposed between the third intermediate position and the closed position of the first shaft; and

wherein, as the first shaft is rotated from its closed position towards its open position, the driving link is moved over its toggle position and the pivot pin is moved the length of the slot and abuts against the one side of the slot to initiate rotation of the disconnect operating shaft from its closed position towards its open position at a fourth intermediate position of the first shaft, the interrupter operating shaft being rotated from its closed position to its open position at the second intermediate position of the first shaft at which the first shaft is disposed between its closed position and its fourth intermediate position;

whereby, when the second operating shaft is rotated from its closed position to its open position, the series circuit through the circuit interrupter and the disconnect switch is opened by the circuit interrupter before the disconnect switch opens, and, when the second shaft is rotated from its open position to its closed position, the disconnect switch closes before the circuit interrupter closes.

4,283,611

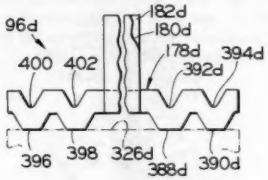
ELECTRICAL SWITCH

David W. Bull, Hersey, Mich., assignor to Nartron Corporation, Reed City, Mich.

Division of Ser. No. 861,436, Dec. 16, 1977, Pat. No. 4,204,102.
This application May 14, 1979, Ser. No. 38,489
Int. Cl.[3] H01H *3/12, 3/14*
U.S. Cl. 200—252 **16 Claims**

1. A movable electrical contact for sliding electrical engagement with at least first and second stationary electrical contacts which are physically separate from each other and spaced from each other, said movable electrical contact comprising a contact main body, said main body comprising first surface means at generally one side of said main body for sliding engagement with said stationary electrical contacts and second surface means at a second side of said main body generally opposite to said one side, said main body when said first

surface means is engaged with only said second stationary electrical contact being movable in a first direction toward said first stationary electrical contact in order to achieve engagement with said first stationary electrical contact, said main body when said first surface means is engaged with only said first stationary electrical contact being movable in a second direction opposite to said first direction toward said second stationary electrical contact in order to achieve engagement with said second stationary electrical contact, said first surface means comprising first and second contacting surfaces, said first contacting surface defining a first contacting area, said second contacting surface defining a second contacting area, said first contacting area being relatively narrow and relatively elongated with the direction of such elongation being generally parallel to said first and second directions, said second



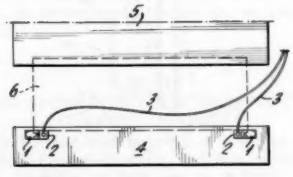
contacting area being relatively narrow and relatively elongated with the direction of such elongation being generally parallel to said first and second directions, said first and second contacting surfaces being generally coplanar with each other, a portion of said first surface means of said main body between said first and second contacting surfaces being spaced away from the plane of said first and second contacting surfaces as to thereby result in said first and second contacting areas being spaced from each other while being generally coplanar, both of said first and second contacting areas being effective for engaging said first stationary electrical contact when said main body is moved in said first direction, and both of said first and second contacting areas being effective for engaging said second stationary electrical contact when said main body is moved in said second direction.

4,283,612

MACHINE GUARDING APPARATUS

Edward G. Richards, Columbia, Md., assignor to Baltimore Aircoil Co., Inc., Jessup, Md.

Filed May 5, 1980, Ser. No. 146,585
Int. Cl.³ H01H *9/20*
U.S. Cl. 200—334 **3 Claims**



1. A method for eliminating accidents on machines having dangerous propensities which comprises:

(a) locating a strip of metal a sufficient distance from the machine so that one cannot stand on the metal and reach into the machine,

(b) placing a foot pedal switch on said strip,

(c) connecting a proximity switch to the foot pedal switch, which proximity switch only activates when it is near metal,

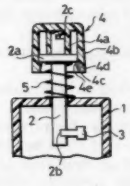
(d) activating the machine by continuously pressing down on the foot pedal switch while said foot pedal switch and proximity switch are located on the metal strip.

4,283,613

CONSTRUCTION FOR ATTACHING KNOB TO MANIPULATION ROD OF PUSH-BUTTON TYPE MECHANISM

Shiro Kondo, and Minoru Oyama, both of Furukawa, Japan, assignors to Alps Electric Co., Ltd., Tokyo, Japan

Filed Apr. 14, 1980, Ser. No. 139,728
Claims priority, application Japan, Apr. 19, 1979, 54/52300[U]
Int. Cl.³ H01H *3/12*
U.S. Cl. 200—340 **3 Claims**



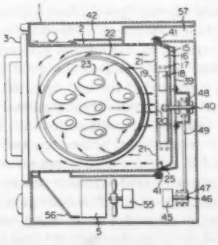
1. A knob and a manipulation rod of a push-button type actuating mechanism adapted to be attached to one another, characterized in that: said manipulating rod of said push-button type actuating mechanism has a flange and a projecting portion projecting axially from said flange, said projecting portion being provided at its end portion with resilient tongues; and that said knob has a cap-like shape having an inner peripheral surface provided with a snapping step for engagement with the outer periphery of said flange, said knob further having a linner cylinder having a bore for receiving said projecting portion of said manipulating rod, said bore having a length smaller than that of said projecting portion so that said tongues are resiliently deformed when said projecting portion is received by said cylinder.

4,283,614

COOKING DEVICE WITH HIGH-FREQUENCY HEATING MEANS AND RESISTANCE HEATING MEANS

Junzo Tanaka, Fujiidera; Toshio Kai, Nara, and Hitoshi Kurita, Yamatokoriyama, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Feb. 7, 1979, Ser. No. 10,054
Claims priority, application Japan, Feb. 20, 1978, 53/18949; Apr. 19, 1978, 53/46991
Int. Cl.³ H05B *6/64*
U.S. Cl. 219—10.55 R **6 Claims**



1. A cooking device utilizing high frequency and forced hot air heating means, comprising:

a housing having a front heating chamber and a rear cham-

ber therein, said front chamber having front, rear, top and bottom walls, and two side walls;
means for permitting charges to be heated to be placed in and removed from said front chamber;
said housing including an apertured wall between said chambers for permitting air flow therebetween, the apertures of said wall comprising a central group of apertures for air movement in one direction through said wall, and a peripheral group of apertures for air movement in the opposite direction through said wall;
fan means having fan blades disposed in said rear chamber for forcing a flow of air from said rear chamber into said front chamber in a horizontal direction extending toward said front wall of said front chamber, through one of said groups of apertures, said air flow returning to said rear chamber through the other of said groups of apertures;
a resistance heating coil disposed in said rear chamber adjacent one group of apertures for heating air prior to flow thereof into said front chamber;
a thermally insulating plate defining a rear wall of said rear chamber;
driving means mounted on said insulating plate for supporting and rotating said fan means;
means for propagating high-frequency electromagnetic wave energy into said front heating chamber from a region adjacent said top wall thereof;
a horizontal turntable rotatably mounted within said front heating chamber adjacent the bottom thereof, in a recess in said bottom wall, for receiving said charges;
means for rotating said turntable;
a first receptacle disposed on said turntable;
a second metal receptacle removably disposed on said first receptacle for rotation in unison therewith,
said second receptacle having legs the length or height of which are such that the hot air discharged from said rear chamber into said front chamber by said fan means may freely flow through the space between said first and second receptacles; and
a layer of self-cleaning catalytic material disposed on said fan blades and on said apertured wall;
whereby the rotation of said turntable distributes the heating effect of said wave energy with respect to said charges, and cooperates with said horizontal forced air flow to provide substantially uniform browning of all exposed surfaces thereof.

4,283,615

DEVICE FOR STOPPING A LEAK IN A STRAIGHT PORTION OF A HEAT-EXCHANGER TUBE

Bernard Vrillon, Wissous, France, assignor to Commissariat a l'Energie Atomique, Paris, France

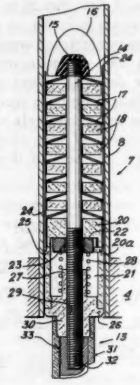
Filed May 11, 1979, Ser. No. 38,315

Claims priority, application France, May 17, 1978, 78 14545

Int. Cl.[3] **B23K** *31/06;* **B22D** *19/10;* **B23K** *11/30;* **F28F** *11/06*

U.S. Cl. 219—66 **14 Claims**

1. A device for stopping a leak in a straight portion of a heat-exchanger tube, wherein said device comprises an axial mandrel of material having good electrical conductivity on which are engaged metal washers of revolution having a conical profile and separated by cylindrical insulating pastilles, an insulating head fixed at one end of the axial mandrel and an insulating support mounted at the end opposite to said head, a threaded portion of said mandrel being passed freely through said support and adapted to cooperate with a nut which is applied against the support and serves to exert on the conical washers an adjustable initial compressive stress such that the outer peripheral edges of said washers are applied against a thin cylindrical lining sleeve which is coaxial with the mandrel, the external diameter of said sleeve being smaller than the internal diameter of the tube in which the leak to be stopped is located, means for introducing the support within the lining sleeve and then introducing the sleeve within the tube in order to place said sleeve opposite to a region which includes said leak, means for subjecting the mandrel aforesaid to an axial displacement with respect to said support so that the conical washers are compressed to a maximum extent and thus undergo a change from a conical profile to a more flattened profile so that each washer exerts on said lining sleeve a radial force which applies said sleeve in intimate contact with said



tube along a number of circular lines corresponding to the number of washers, and means for passing an electric current successively through the mandrel, the washers, the lining sleeve and the tube in order to joint said tube and said sleeve by means of resistance welds formed along said circular lines.

4,283,616

GAS METAL ARC WELDING METHOD FOR PREPARING MISALIGNED TUBE HOLES

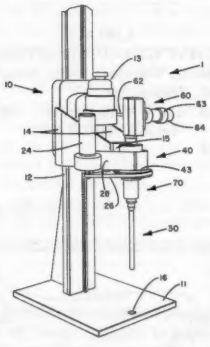
F. Timothy Bacha, Crown Point, Ind., assignor to Carrier Corporation, Syracuse, N.Y.

Division of Ser. No. 896,125, Apr. 14, 1978, Pat. No. 4,225,772.

This application Dec. 28, 1979, Ser. No. 108,265

Int. Cl.[3] **B23K** *9/04*

U.S. Cl. 219—76.14 **3 Claims**



1. A gas metal arc welding method for repairing a relatively small diameter tube hole including the steps of:
guiding a consumable wire from a welding torch, through a guide means, and into the tube hole;
directing the consumable wire toward the tube hole sidewall as the wire exits the guide means;
thermally and electrically protecting the lower part of the guide means;
directing an inert gas from the welding torch, through a gas nozzle, and into the tube hole;
rotatably connecting the gas nozzle with the welding torch

for allowing relative rotation therebetween while directing the inert gas therebetween;

rotatably connecting the guide means with the welding torch for allowing relative rotation therebetween while guiding the consumable wire therebetween;

conducting an electric current between the welding torch and the guide means; and

vertically passing the nozzle assembly through the tube hole at a controlled rate.

4,283,617

AUTOMATIC PIPE WELDING SYSTEM

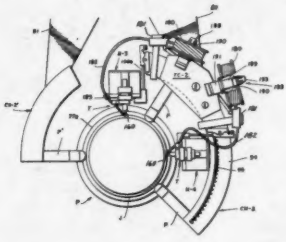
George J. Merrick, Franklin; George E. Cook, Brentwood, and Donald D. Modglin, Nashville, all of Tenn., assignors to Merrick Welding International, Inc., Nashville, Tenn.

Division of Ser. No. 654,975, Feb. 3, 1976, Pat. No. 4,145,593. This application Mar. 19, 1979, Ser. No. 21,784

The portion of the term of this patent subsequent to Mar. 20, 1996, has been disclaimed.

Int. Cl.³ B23K *9/12*

U.S. Cl. 219—125.1 **4 Claims**



1. The process of arc welding a joint along a path while the size of the weld puddle in the joint is selectably adjusted in response to location of the arc along the path, comprising the steps of:

establishing an electric arc with the material being welded so as to create a weld puddle of molten metal at a location on the joint;

moving the arc to traverse the path being welded;

supplying preheated filler metal to said weld puddle while moving said arc; and

adjusting the amount of supplied filler metal by controlling the preheating of said filler metal and the rate at which said preheated filler metal is supplied to said weld puddle, in response to a selectably variable function of the location of said arc along said path, so that the size of said weld puddle at each location on the path is adjustable to the puddle size previously determined for said locating along said path.

4,283,618

WELDING APPARATUS WITH STEPPING CIRCUIT CURRENT CONTROL

Franz Jakob, Unterhaching, Fed. Rep. of Germany, assignor to Holger Reeh, Unterpfaffenhofen, Fed. Rep. of Germany

Filed Sep. 19, 1978, Ser. No. 943,877

Claims priority, application Fed. Rep. of Germany, Sep. 20, 1977, 2742341

Int. Cl.³ B23K *9/10*

U.S. Cl. 219—130.5 **8 Claims**

1. An electric welding apparatus, particularly for inert gas d.c. welding, having an operation circuit, including a power supply and the welding electrode, and a control circuit for controlling the operation circuit, said control circuit including a stepping circuit comprising:

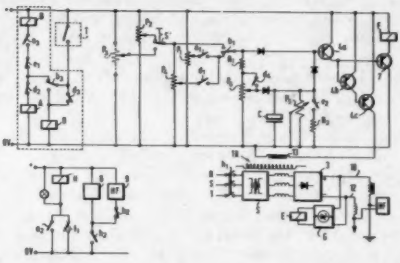
first switching circuit means for setting a repose current,

second switching circuit means for setting an ignition current and switching on the power supply for the operation circuit,

third switching circuit means for setting a welding current,

fourth switching circuit means for reducing, with an adjustable time constant, the welding current to an intermediate crater filling current value, and

fifth switching circuit means for reducing, with an adjustable time constant, said intermediate crater filling current



value to said repose current, said first to fifth switching circuit means being operatively connected to and controlled by the successive operation of a trip switch and a limit switch, said limit switch being energized when the output voltage of the welding apparatus rises to a value above the welding voltage so that when said limit switch is energized said stepping circuit is automatically reset to one of said first or second switching circuit means as a function of the switching state of said trip switch.

4,283,619

GLOW PLUG TEMPERATURE CONTROL APPARATUS

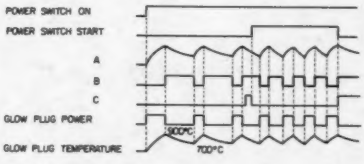
Yoshiaki Abe, Higashimatsuyama, Japan, assignor to Diesel Kiki Company, Ltd., Tokyo, Japan

Filed Mar. 21, 1979, Ser. No. 22,722

Claims priority, application Japan, Apr. 4, 1978, 53-44140[U]

Int. Cl.³ H05B *1/02*

U.S. Cl. 219—492 **10 Claims**



1. A glow plug temperature control apparatus including a glow plug, power source means for applying electric power to the glow plug and first switch means connected between the power source means and the glow plug, characterized by comprising:

time constant circuit means having capacitance means and resistance means;

second switch means connected between the power source means and the time constant circuit means;

control means constructed to sense a voltage across the capacitance means and control the first and second switch means to connect the power source means to the glow plug and time constant circuit means in accordance therewith, the time constant circuit means being constructed so that the voltage across the capacitance means is proportional to a temperature of the glow plug;

the control means being constructed to control the first and second switch means to connect the power source means to the glow plug and time constant circuit means when the

voltage across the capacitance means is below a predetermined value and to disconnect the power source means from the glow plug and time constant circuit means when the voltage across the capacitance means is above the predetermined value;

a control switch having an OFF position, an ON position and a START position, the control means comprising timer means for controlling the first and second switch means to maintain the power source means disconnected from the glow plug and time constant circuit means after the control switch has been changed from the OFF position to the ON position for a predetermined length of time;

timer disable means for disconnecting the timer means from the first and second switch means when the control switch is in the START position;

the capacitance means comprising a capacitor, the resistance means comprising a charging resistor connected so that the capacitor charges from the power source means through the second switch means and the charging resistor when the time constant circuit means is connected to the power source means by the second switch means and a discharging resistor connected so that the capacitor discharges through the discharging resistor when the time constant circuit means is disconnected from the power source means by the second switch means; and

compensation means for compensating the time constant circuit means when the control switch is in the START position.

4,283,620

ARRANGEMENT FOR DETERMINING THE LENGTH OF ARBITRARY SHIFT REGISTERS

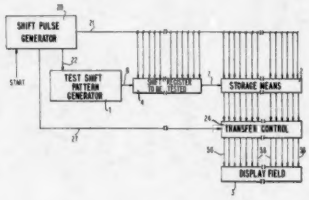
Heinz Drescher, Holzgerlingen; Heinrich Imbusch, Mainz, and Hans H. Lampe, Herrenberg, all of Fed. Rep. of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 2, 1979, Ser. No. 54,327

Claims priority, application Fed. Rep. of Germany, Sep. 14, 1978, 2839950

Int. Cl.[3] **G01R** *31/26*

U.S. Cl. 235—92 SH **19 Claims**



1. An arrangement to aid in determining the unknown length L_x of a shift register not exceeding a predetermined maximum length L_{max} said arrangement including:

(a) circuit means, connected to the input of a shift register whose length L_x is to be determined, for generating a test shift pattern of length $L_{max}+K$, with $K \geqq 2$, which pattern comprises a defined homogeneous bit configuration having a defined data transition at the end thereof, and for shifting said test shift pattern into the shift register;

(b) storage means of length $L_{max}+K$ having $L_{max}+K$ individual cells, connected to the output of the shift register whose length is to be determined, for accommodating information as it emerges therefrom by storing said information of the length L_x of the shift register and portion $L_{max}+K-L_x$ of the shift pattern; and

(c) display means having individual fields permanently associated with one storage cell each of said storage means and operatively coupled thereto for displaying the contents of said storage cells so that said data transition and the length L_x of the shift register can be displayed for determination.

4,283,621

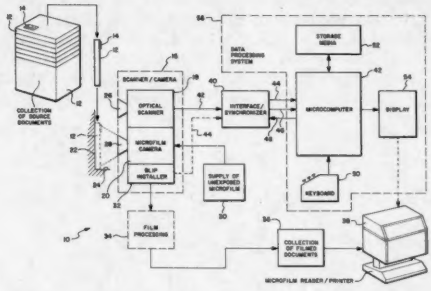
APPARATUS AND METHOD OF STORING AND RETRIEVING INFORMATION

Robert Pembroke, 363 S. 500 East, Salt Lake City, Utah 84102

Filed Dec. 14, 1979, Ser. No. 103,501

Int. Cl.[3] **G06F** *15/20;* **G03B** *23/12, 27/32;* **G06K** *7/10*

U.S. Cl. 235—375 **24 Claims**



1. A system for storing and retrieving information contained in a plurality of source documents, said system comprising in combination

identifying means of uniquely identify each of said plurality of source documents;

scanning means for randomly reading each of said identifying means and producing a unique identifying signal as a function thereof;

capturing means for sequentially preserving an image of each of said plurality of source documents immediately subsequent to the random reading of each of said identifying means by said scanning means;

addressing means for annotating each of said images preserved by said capturing means with an address symbol to indicate the relative sequential position where said image is preserved within said capturing means;

indexing means for aligning each of said unique identifying signals generated by said scanning means, which identifying signals correspond to a unique source document, with a corresponding address signal generated by said indexing means, which address signal corresponds to the address symbol annotated on the preserved image of said unique source document by said addressing means, said indexing means thus producing a unique index signal that indicates where the image of any one of said plurality of source documents is preserved within said capturing means;

synchronization means to synchronize said indexing means with said addressing means, thereby permitting said address signal generated by said indexing means to correspond to said address symbol annotated on said preserved images by said addressing means;

storage means for storing each of said unique index signals, thereby producing index data that can be retrieved for subsequent reference thereto;

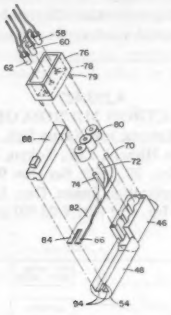
data viewing and sorting means for selectively retrieving and viewing said index from said storage means and sorting therethrough to locate the address of an image preserved in said capturing means corresponding to a desired source document; and

image display means for selectively displaying one of said images preserved in said capturing means.

4,283,622
BAR CODE READER

Barry E. Passer, Ithaca, and George A. Sculley, Endicott, both of N.Y., assignors to NCR Corporation, Dayton, Ohio

Filed May 14, 1979, Ser. No. 39,013
Int. Cl.[3] G06K *7/10, 19/00*
U.S. Cl. 235—462 8 Claims



1. In combination with a record member having first and second parallel tracks of encoded indicia with each indicia of each track being horizontally aligned with the corresponding indicia in the other track, a member for sensing both tracks of indicia upon movement of the record member past the sensing member comprising:

a housing member having a scanning surface;

a pair of apertures located in said scanning surface each associated with one of the tracks of coded indicia wherein the aperture associated with the first track of indicia being located in said scanning surface offset along the path of movement of the record member to the other aperture;

a source of light mounted in said housing member;

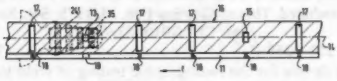
a plurality of light sensors mounted in said housing member each associated with one of the apertures in the scanning surface of the housing member;

and light-transmitting means located within the housing member and being in communication with the source of light, the light sensors, and the apertures whereby light is transmitted from the light source to the tracks of coded symbols on a record member positioned adjacent the apertures and reflected back to the light sensors.

4,283,623
READING APPARATUS FOR READING COLORED MARKINGS APPLIED TO OBJECTS

Walter von Stein, Waldkirch, and Günter Fetzer, Gundelfingen, both of Fed. Rep. of Germany, assignors to Erwin Sick Gesellschaft mit beschränkter Haftung Optik-Elektronik, Waldkirch, Fed. Rep. of Germany

Filed Sep. 27, 1978, Ser. No. 946,165
Claims priority, application Fed. Rep. of Germany, Sep. 27, 1977, 2743459
Int. Cl.[3] G06K *7/12;* B07C *5/342;* G06K *7/10, 9/00*
U.S. Cl. 235—465 18 Claims

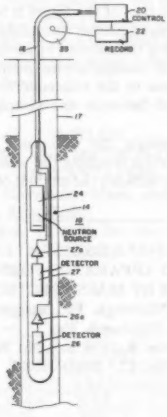


1. Reading apparatus suitable for reading a series of colored markings arranged one behind the other on an object the apparatus comprising an illuminating system for producing an illuminating beam of light capable of illuminating said colored markings provided on an object during relative movement thereof through the beam of light, optical means capable of receiving light from said colored markings and forming an image thereof moving in a first direction past an aperture member, the aperture member having a series of spaced apart optical apertures including first read apertures and at least one relatively smaller recognition aperture, there being further provided means for producing movement of said series of optical apertures in a second direction transverse to said first direction whereby said at least one recognition aperture and said first read apertures move transversely across said image, a color sensitive photoelectric detector arrangement disposed behind the aperture member to receive light from the colored markings and transmitted through any of said first read apertures and said at least one recognition aperture to provide respective reading and recognition signals and means for recognising a reading signal only when a corresponding recognition signal has been detected which shows that said image is correctly aligned with said first read apertures.

4,283,624
EPITHERMAL NEUTRON DECAY LOGGING

William R. Mills, Jr., Duncanville, Tex., assignor to Mobil Oil Corporation, N.Y.

Filed Jun. 25, 1979, Ser. No. 51,566
Int. Cl.[3] G01V *5/00*
U.S. Cl. 250—264 12 Claims



1. In the logging of a well penetrating a subterranean formation containing free hydrogen which is mobile in said formation and bound hydrogen which is immobile in said formation, the method comprising:

(a) irradiating said formation with a burst of fast neutrons whereby said fast neutrons enter said formation and are moderated therein to form a population of epithermal neutrons,

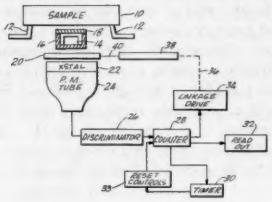
(b) measuring the decay rate of epithermal neutrons in said formation within an energy range having a lower limit which is less than the chemical binding energy of bound hydrogen in said formation, and

(c) recording the decay rate measurement obtained in step (b) in correlation with depth.

4,283,625
X-RAY FLUORESCENCE ANALYSIS

Thomas C. King, Early, Tex., assignor to Associated Metals & Minerals Corporation, New York, N.Y.

Filed Jul. 13, 1979, Ser. No. 57,451
Int. Cl.³ G01N *23/22*
U.S. Cl. 250—272 **24 Claims**



1. Apparatus for reducing the effects of sample composition and physical condition, and variation of radiation intensity from a source used to analyze a sample for the presence of an element which fluoresces characteristic radiation when exposed to a source of radiation, the apparatus comprising:

means for holding the sample;

means for irradiating the sample with a radiation of sufficient energy to cause the element to fluoresce the characteristic radiation;

a first filter which substantially attenuates the characteristic radiation;

a second filter which attenuates the characteristic radiation less than the first filter;

means for sensing radiation from the sample;

means for measuring the time required for the radiation sensing means to sense a fixed amount of radiation from the sample when one of the filters is between the sample and radiation sensing means to establish a reference time;

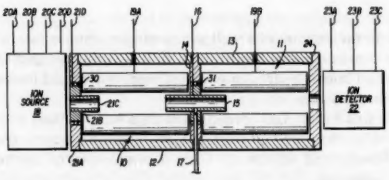
means for measuring the amount of radiation from the sample reaching the sensing means during a time interval substantially equal to the reference time when the other filter is disposed between the sample and the sensing means; and

means for determining the difference between the two amounts of radiation reaching the sensing means through the two filters to indicate the amount of the element in the sample.

4,283,626
METHODS AND APPARATUS FOR ANALYSIS OF MIXTURES BY MASS SPECTROMETRY

Melvin W. Siegel, Pittsburgh, Pa., assignor to Extranuclear Laboratories, Inc., Pittsburgh, Pa.

Filed Nov. 8, 1979, Ser. No. 92,559
Int. Cl.³ B01D *59/44*
U.S. Cl. 250—292 **21 Claims**

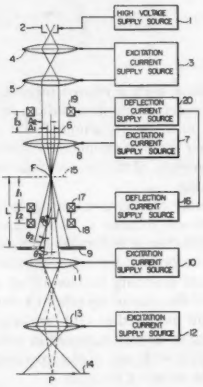


1. A system of mass spectrometry for the analysis of ions of a selected mass produced by mass spectrometry wherein the ions are subjected to collision fragmentation and the resulting ion particles are subjected to further mass anaylsis, the system comprising: an ion source for the sample molecules to be analyzed, a first quadrupole mass spectrometer adapted to receive ions from said source at its inlet and a second quadrupole mass spectrometer having its inlet proximate the outlet of said first mass spectrometer; a collision chamber between said mass spectrometers, said collision chamber comprising shielding means composed of a leaky dielectric material which has the characteristics of an insulator for RF electrical fields and of an electrical conductor for electrical fields produced by DC and low scan frequency voltages utilized for quadrupole mass spectrometry; and an ion detector adapted to receive ions from the outlet of said second quadrupole mass spectrometer.

4,283,627
ELECTRON MICROSCOPE

Shigeto Isakozawa, Katsuta, and Kazuo Shii, Asahimura, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 29, 1979, Ser. No. 98,664
Claims priority, application Japan, Dec. 1, 1978, 53-147927
Int. Cl.³ G01N *23/00*
U.S. Cl. 250—311 **10 Claims**


HIGH VOLTAGE SUPPLY SOURCE
EXCITATION CURRENT SUPPLY SOURCE
DEFLECTION CURRENT SUPPLY SOURCE
EXCITATION CURRENT SUPPLY SOURCE
DEFLECTION CURRENT SUPPLY SOURCE
EXCITATION CURRENT SUPPLY SOURCE
EXCITATION CURRENT SUPPLY SOURCE

1. An electron microscope comprising means for producing an electron beam; means for directing said electron beam to a sample whereby said beam penetrates said sample; an objective lens disposed in the path of said beam; first means for deflecting the transmitted beam with the hind focal point of said objective lens set substantially as the deflecting center so as to select the observation field of said sample; a viewing screen on which the deflected beam is cast; and second means for deflecting said electron beam directed at said sample in response to the deflection of said transmitted beam by said first means.

4,283,628
APPARATUS FOR THE CONTROL OF SELF-PROPELLED GAMMA-FLAW DETECTOR

Stefan I. Kulekov, and Alexander S. Pavlov, both of Sofia, Bulgaria, assignors to DSO "Montaji"—Kontrolno Zavarachno Upravlenie, Sofia, Bulgaria

Continuation-in-part of Ser. No. 908,766, May 23, 1978, abandoned, which is a continuation of Ser. No. 746,291, Dec. 1, 1976, abandoned. This application Feb. 23, 1979, Ser. No. 14,690
Int. Cl.³ G01N *23/00*
U.S. Cl. 250—358 P **7 Claims**

1. In a device for the radiographic testing of weld joints in a pipeline, including a normally deactivated radiation emitter trainable upon a weld joint, a self-propelled carrier for said radiation emitter, and propulsion means on said carrier for driving same inside a pipeline to be inspected,

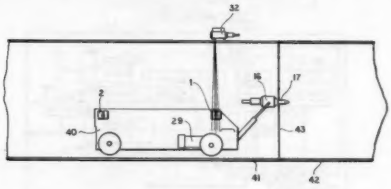
the combination therewith of equipment aboard said carrier comprising:

sensing means responsive to external radiation transmitted through the pipeline wall;

memory means adapted to assume several different states, including a quiescent state and at least one operational state, and connected to said sensing means for switchover from one state to another by command pulses of said external radiation;

a first signal channel jointly controlled by said memory means for activating said radiation emitter in response to a command pulse of predetermined minimum duration in a de-energized condition of said propulsion means;

a second signal channel controlled by said memory means



for de-energizing and energizing said propulsion means in said quiescent state and said operational state, respectively, of said memory means;

pulse-width-discriminating means in said first signal channel for making same nonresponsive to command pulses of less than said minimum duration, said pulse-width-discriminating means including a logical coincidence circuit with a pair of parallel inputs and delay means in series with one of said parallel inputs; and

timing means connected between said first signal channel and said memory means for switching the latter to deactivate said radiation emitter after a predetermined irradiation period.

4,283,629

METHOD AND APPARATUS FOR TESTING MATERIALS SUCH AS DISEASE IN LIVING TREES

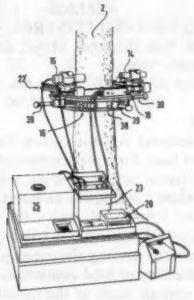
Adolf Habermehl, Zum Lahnberg 44, D-3550 Marburg, Lahn, Fed. Rep. of Germany, and Hans-Werner Ridder, Marburg, both of Fed. Rep. of Germany, assignors to Adolf Habermehl, Marburg, Fed. Rep. of Germany

Filed Mar. 23, 1979, Ser. No. 23,265

Claims priority, application Fed. Rep. of Germany, Oct. 26, 1978, 2846702

Int. Cl.³ G03B *41/16*

U.S. Cl. 250—445 T **22 Claims**



1. A method for the non-destructive testing of immobile objects such as for disease in living trees, or the like comprising the steps of mounting on one side of said object a portable source of radiation and on the opposite side of said obejct a portable detector for such radiation, indexing said source and said detector cooperatively about said object through a plurality of positions in a given cross-sectional plane, passing a beam of predetermined radiation through said object and detecting the beam at each of said positions, determining responsive to said detection the coefficient of absorption of radiation of said object, and converting said coefficient of absorption at each of said positions into a computerized tomographic display.

4,283,630

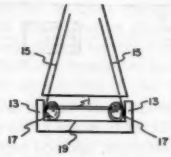
IRRADIATED FILM

Stephen L. Fowler, Taylors, S.C., assignor to W. R. Grace & Co., Duncan, S.C.

Division of Ser. No. 784,184, Apr. 4, 1977, Pat. No. 4,178,220. This application May 29, 1979, Ser. No. 43,402

Int. Cl.³ H01J *37/06*

U.S. Cl. 250—492 B **2 Claims**



1. An apparatus adapted to irradiate a film of thermoplastic material comprising:

source means for a beam of accelerated electrons; and

trough means comprising trough bottom means and at least one deflection box means;

wherein accelerated electrons directly impinge upon said deflection box means, are deflected to impinge upon said trough bottom means and are then further deflected;

whereby a lobe of high electron probability density resulting from said deflections is adapted to impinge an edge of the film to be irradiated.

4,283,631

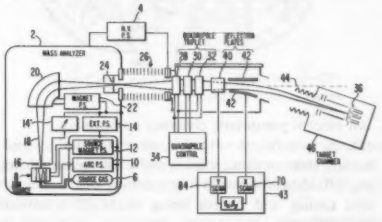
BEAN SCANNING AND METHOD OF USE FOR ION IMPLANTATION

Norman L. Turner, Gloucester, Mass., assignor to Varian Associates, Inc., Palo Alto, Calif.

Filed Feb. 22, 1980, Ser. No. 123,607

Int. Cl.³ B01D *59/44*; A61K *27/02*

U.S. Cl. 250—492 B **8 Claims**



1. An ion implantation system for irradiation of a workpiece comprising ion source means for production of a beam of ions, kinematic analysis means for resolving ion species present in said beam, ion optical means for forming and focusing said beam, and ion beam scanning means, said scanning means comprising at least one deflecting means for compensating non-uniformity of ion dosage along the path of a trace, said deflecting means controlled in response to a non-linear waveform, means for directing said trace in a two-dimensional

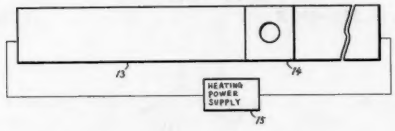
pattern, means for repeating said trace for a preselected number of repetitions, each said repetition displaced from the remaining said repetition.

4,283,632

ELECTRON BEAM APERTURE DEVICE

Seiichi Nakagawa, and Takayoshi Ikeda, both of Akishimashi, Japan, assignors to Nihon Denshi Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 18, 1979, Ser. No. 86,254
Claims priority, application Japan, Oct. 23, 1978, 53/130250
Int. Cl.[3] G01J *1/00*
U.S. Cl. 250—503 **7 Claims**



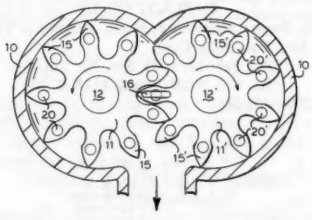
1. In an X-ray microanalyzer, an apertured baffle comprising an apertured foil selected from the group molybdenum, tantalum, tungsten and platinum, said foil being characterized by the application of thin layers of coating material on both sides of said foil in the vicinity of the aperture, the atomic number of the coating material on one side of the foil being larger than that of the material from which the foil is constituted, and the atomic number of the coating material on the other side of the foil being smaller than that of the material from which the foil is constituted.

4,283,633

ELECTRO-PNEUMATIC DYNAMO

Peter Gijbels, Bosstraat 7, 1920 Diegem, and Jozef Gijbels, Tramlaan 148, 1960 Sterrebeek, both of Belgium

Filed Sep. 8, 1980, Ser. No. 184,879
Int. Cl.[3] H02P *9/04;* **F02B** *53/00*
U.S. Cl. 290—1 R **6 Claims**



1. An electro-pneumatic dynamo comprising:

a casing, two rotors rotatably mounted within said casing having intermeshing blades and inlet means for introducing a fluid between two intermeshing blades of said rotors, said casing and blades being made of a non-magnetic material; and

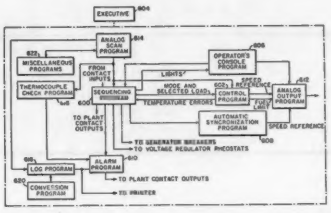
generator means including a plurality of magnetic rods, each of which is mounted in the top of each of said blades and a plurality of magnetic circuit means mounted on said casing for cooperation with said rods, said circuit means each comprising a coil, a generally U-shaped magnetic bar having a base on which said coil is mounted and two ends between which said rods of one of said rotors passes upon rotation of said rotors so as to induce a flow of magnetic flux through said bar and thereby inducing a current flow in said coil.

4,283,634

SYSTEM AND METHOD FOR MONITORING AND CONTROLLING OPERATION OF INDUSTRIAL GAS TURBINE APPARATUS AND GAS TURBINE ELECTRIC POWER PLANTS PREFERABLY WITH A DIGITAL COMPUTER CONTROL SYSTEM

Robert A. Yannone, Aldan, and Terry J. Reed, Latrobe, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation of Ser. No. 155,905, Jun. 23, 1971, abandoned.
This application Dec. 26, 1972, Ser. No. 317,839
Int. Cl.[2] H02P *9/04*
U.S. Cl. 290—40 R **15 Claims**



1. A gas turbine electric power plant comprising a gas turbine having compressor, combustion and turbine elements, a generator coupled to said gas turbine for drive power, a fuel system for supplying fuel to said gas turbine combustion elements, a control system including a digital computer and an input/output system therefor, means for operating said fuel system to energize said gas turbine operably coupled between said fuel system and said control means, a plurality of process sensors operably coupled to said control system and disposed to detect plant conditions related to said gas turbine and said generator, said plurality of sensors comprising at least a first arrangement of process temperature sensors operatively associated with said combustion elements, each of said temperature sensors providing a gas discharge temperature indication for at least one corresponding combustion element, means for operating said computer for processing said temperature indications to determine the validity of each of such indications, means for operating said computer for combining valid temperature indications retained after said processing step to derive a control parameter, and means for operating said computer to make control action determinations for implementation by said fuel system operating means and to make predetermine turbine alarm status determinations in response to individual temperature indications derived from at least said first arrangement of process temperature sensors.

4,283,635

LOAD DEMAND CONTROL SYSTEM

Alden M. Balmer, New Brighton, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Jul. 25, 1979, Ser. No. 60,304
Int. Cl.[3] H01H *43/00*
U.S. Cl. 307—35 **9 Claims**

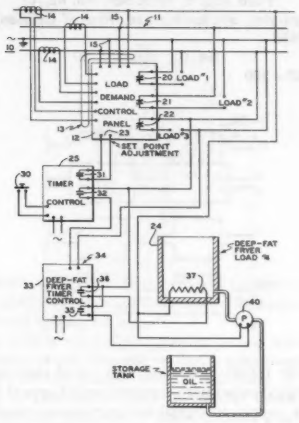
1. In a load demand control system for limiting the total average electrical load, for a predetermined moving interval of time, to an installation having at least one large electric load device to be operated a portion of an interval of time, comprising,

load demand control means having an input electrical power sensing means for sensing the input power to an installation and a plurality of load control circuits for selectively controlling various loads of the installation to shed loads when said input power exceeds a first predetermined value,

timer control means selectively operated when the one large electric load device is to be operated, said timer control means comprising,

first means for resetting said first predetermined value of said

load demand control means to a second predetermined value to cause said load demand control means to shed loads to maintain the input power below said second predetermined value for a first predetermined time period, and



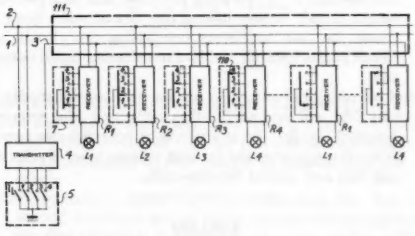
second means adapted to be controlled by said timer control means to subsequently initiate operation of said large load device after said first predetermined time period for a second predetermined time period, whereby the total average input power for a predetermined moving interval of time is maintained at a minimum value.

4,283,636

ELECTRONICALLY CONTROLLED POWER SUPPLY RAIL

Liang-ing Tchang, Paris, France, assignor to LITA, Paris, France

Filed Nov. 17, 1978, Ser. No. 961,857
Claims priority, application France, Nov. 22, 1977, 77 35044
Int. Cl.³ H04Q *11/00*
U.S. Cl. 307—38 **9 Claims**



1. An electronically controlled power supply rail for supplying power from a supply source to selected ones of a plurality of loads, each connected to a respective one of a plurality n of utilisation channels, comprising:

a first conductor and a second conductor for transmitting power;

a bus for transmitting signals indicative of selected loads, said bus consisting of one third conductor providing a first control signal;

a control unit having a plurality n of switches for supplying a second control signal;

a transmitter positioned at one end of said rail and responsive to said second control signal; said transmitter comprising:

a counting circuit which receives at its inputs said second control signal from the control unit and which, as a function of said second control signal, emits an intermediate signal, said counting circuit cooperating with a synchronising system for triggering the intermediate signal at a predetermined moment, and

a shaping circuit receiving the intermediate signal and converting said intermediate signal into said first control signal formed by a train of pulses (a), (b), (c) . . . and a zero reset pulse (Z), transmitted to said plurality of receivers by means of said third conductor;

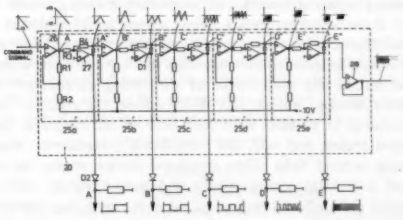
a plurality of receivers, each of said receivers having first, second and third inputs respectively connected to said first, second and third conductors and having a first output connected to an associated one of said utilisation channels and a second output having n terminals connected to an associated channel selecting system having a movable contact for selecting one of said terminals in accordance with the utilisation channel which is to be supplied; and each of said receivers comprising a power switching member and means for performing a cycling operation during each period of said supply source; said selecting system, said power switching member and said cycling operation performing means cooperating with one another to cause, as a function of said control signal received by said plurality of receivers via said transmitter, voltage to be applied to the load of the utilisation channel which is associated with the receiver which is connected to said associated selecting system having said movable contact set to the said one selected terminal.

4,283,637

SIGNAL GENERATOR

Herbert Handte, Filderstadt, and Friedrich Kollmar, Grafenau, both of Fed. Rep. of Germany, assignors to MOOG GmbH, Böblingen, Fed. Rep. of Germany

Division of Ser. No. 507, Jan. 2, 1979, Pat. No. 4,217,635. This application Dec. 3, 1979, Ser. No. 99,644
Claims priority, application Fed. Rep. of Germany, Jan. 5, 1978, 2800441
Int. Cl.³ H03K *4/08*
U.S. Cl. 307—228 **5 Claims**



1. A signal generator arranged to be supplied with a command signal and operative to produce a first output signal in the form of a series of continuous voltage triangles, said signal generator comprising:

at least one signal converter, each signal converter having

a level symmetrizing circuit arranged to receive said command signal input and operative to amplify and symmetrize said command signal input, said level symmetrizing circuit including a first operational amplifier arranged to receive an input signal at its non-inverting inlet; and

a rectifier circuit arranged to receive the output of said level symmetrizing circuit and operative to provide a full wave rectified signal of such amplified and symmetrized signal; said rectifier circuit including a second operational amplifier arranged to receive a signal at its inverting inlet and

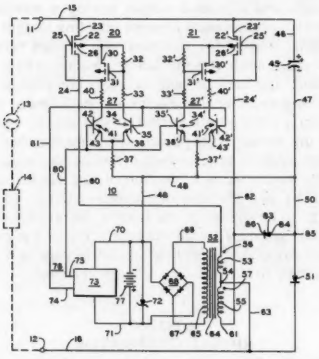
having its non-inverting inlet connected to ground, and including a feedback circuit connecting the outlet and inverting inlet of said second operational amplifier, said feedback circuit including a series-connected diode and resistor, the cathode of said diode being connected to the outlet of said second operational amplifier.

4,283,638

FIELD EFFECT TRANSISTOR SWITCHED TEMPERATURE CONTROL CIRCUIT

Arlon D. Kompelien, Richfield, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Jul. 23, 1979, Ser. No. 59,810
Int. Cl.³ H03K *17/687*
U.S. Cl. 307—580 **10 Claims**



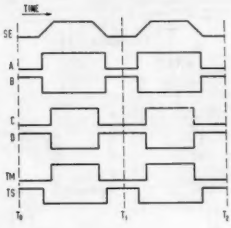
1. A temperature control circuit adapted to control field effect transistor device means to switch an alternating current potential to operate temperature control load means, including: field effect transistor device means including input switching circuit means and output means with said field effect transistor device means being capable of being switched between conductive and non-conductive states; transformer means including low impedance primary winding means, high impedance primary winding means, and secondary winding means with said three winding means being magnetically coupled; said field effect device output means and said low impedance winding means adapted to be connected in a series circuit with said load means and said source of alternating current potential; energy storage means and series connected rectifier means connected in parallel with said field effect transistor device output means and said low impedance transformer winding means; second field effect transistor device means including input switching circuit means and output means with said second field effect transistor device means being capable of being switched between conductive and non-conductive states; said second field effect transistor device output means in series circuit with said high impedance primary transformer winding means connected in parallel circuit with said energy storage means and said rectifier means; second rectifier means connected from said energy storage means to said second field effect transistor device output means; power supply means having an input connected to said transformer secondary winding to receive power therefrom and having direct current potential output means; temperature responsive control means having an input connected to said direct current potential output means to power said temperature responsive control means; and temperature responsive control output means connected to both of said field effect transistor device means input switching circuit means to differentially control said field effect transistor device means.

4,283,639

DEVICE FOR PRODUCING TWO CLOCK PULSE TRAINS FROM A PERIODIC SIGNAL OF ANY WAVEFORM

Helmut Roesler, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Aug. 1, 1979, Ser. No. 62,767
Claims priority, application Fed. Rep. of Germany, Aug. 30, 1978, 2837855
Int. Cl.³ H03K *5/00*
U.S. Cl. 307—269 **14 Claims**



1. A pulse transformer with two signal outputs at which different digital pulses with the same period appear for producing a clock supply to digital semiconductor circuits, for use with a control input source which supplies periodic control signals to a transformer input, said transformer comprising:

a first flip-flop cell having inverted and non-inverted signal inputs connected to said control input source and having two signal outputs;

a voltage level divider having an input connected to said control input source and having an output tap;

a second flip-flop cell having inverted and non-inverted inputs connected to said output of said voltage level divider, and having two signal outputs;

a first push-pull output circuit having two inputs respectively connected to said two signal outputs of said first flip-flop cell;

a second push-pull output circuit having two inputs respectively connected to said two signal outputs of said second flip-flop cell;

said first and second push-pull output circuits each comprising two series connected transistors, one of said transistors connected to a reference potential and the other of which is connected to an operating potential, and each push-pull output circuit further having one circuit point lying between the two transistors comprising the circuit, said circuit points forming said two transformer signal outputs; and

said operating potential also serving as a current supply for said first and second flip-flop cells, and said reference potential also serving as a reference potential also serving as a reference potential for said voltage level divider and said first and second flip-flop cells.

4,283,640

ALL-NPN TRANSISTOR DRIVER AND LOGIC CIRCUIT

Richard R. Konian, Poughkeepsie, and James L. Walsh, Hyde Park, both of N.Y., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Oct. 5, 1979, Ser. No. 82,256
Int. Cl.³ H03K *19/00, 3/26*
U.S. Cl. 307—270 **9 Claims**

1. An NPN transistor driver circuit comprising:

a first pair of NPN transistors,

the base of said pair of transistors being connected to an input terminal,

a third NPN transistor,

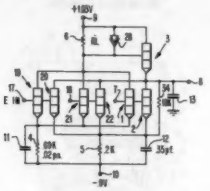
the emitter of said third transistor being connected to the

collector of one transistor of said transistor pair and to an output terminal,

the collector of the other transistor of said transistor pair being connected to the base of said third transistor,

the base and collector of said third transistor being connected to first biasing means,

a pair of resistors,



the emitters of the transistors of said transistor pair being connected through respective ones of said pair of resistors to second biasing means,

a source of first input signal coupled to said input terminal,

the voltages of said first and second biasing means being set relative to the lowest voltage excursion of said input signal, so that substantially no current flows through at least said one transistor of said transistor pair during said lowest voltage excursion.

4,283,641

FEEDBACK BIASING CIRCUIT ARRANGEMENT FOR TRANSISTOR AMPLIFIER

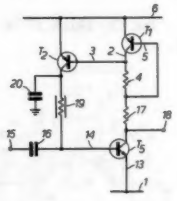
John A. Skingley, Purton, England, assignor to Plessey Handel und Investments AG, Zug, Switzerland

Filed Oct. 20, 1978, Ser. No. 953,206

Claims priority, application United Kingdom, Oct. 21, 1977, 43866/77

Int. Cl.³ H03K *3/01, 3/26*

U.S. Cl. 307—297 **4 Claims**



1. An amplifier circuit arrangement, comprising:

first and second transistors, each having a base, an emitter and a collector electrode, the first and second transistors being connected to pass current in parallel with one another;

interconnecting means for interconnecting the first and second transistors so that a base-emitter voltage applied to the first transistor is derived from a base-emitter voltage applied to the second transistor;

biasing reduction means connected between the base and collector of said second transistor for reducing the base-emitter voltage applied to the first transistor by a component proportional to the magnitude of the current passed by the second transistor; and

an amplifier transistor having a base input for receiving a signal frequency to be amplified, an emitter; and a collector output for delivering amplified output signals, the collector output of the amplifier transistor being connected to said second transistor so as to pass current in series with the said second transistor, the collector of the said first transistor being connected to the base of said amplifier transistor for providing base bias current thereto.

4,283,642

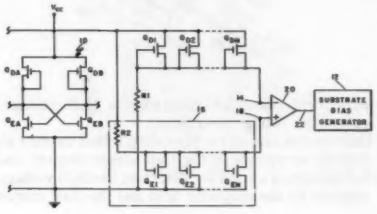
REGULATION OF CURRENT THROUGH DEPLETION DEVICES IN A MOS INTEGRATED CIRCUIT

Robert S. Green, South Jordan, Utah, assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Sep. 10, 1979, Ser. No. 74,015

Int. Cl.³ H03K *3/01*

U.S. Cl. 307—297 **10 Claims**



1. In an NMOS integrated circuit containing a plurality of given depletion devices having a given size and a given pinch-off voltage characteristic on a common substrate, a system for regulating current flow through the given depletion devices, comprising

a substrate bias generator coupled to the substrate for pumping the substrate negatively to lower the effective pinch-off voltage of the given depletion devices, and thereby decrease the current through the given depletion devices;

one of the given depletion devices having its source and gate connected to a first node;

a reference device connected to a second node for defining a reference voltage at the second node;

a comparison circuit connected to the first and second nodes for comparing the respective voltages at the first and second nodes and for providing a control signal when the voltage at the first node is not greater than the voltage at the second node, wherein the comparison circuit is coupled to the substrate bias generator for turning off the substrate bias generator while the control signal is provided; and

a resistance connected to the first node in series with the given depletion device that is connected thereto for defining the level of current flow through the given depletion devices at which the substrate bias generator is turned off, to thereby regulate said current flow at said level.

4,283,643

HALL SENSING APPARATUS

Harry P. Levin, N. Hollywood, Calif., assignor to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed May 25, 1979, Ser. No. 42,645

Int. Cl.³ G01R *33/00;* **H03K** *17/04*

U.S. Cl. 307—309 **9 Claims**

1. A Hall sensing apparatus for sensing the current in a conductor, the apparatus being responsive to the induced circumferential magnetic field in a magnetic field plane perpendicular to the axis of the conductor, comprising:

magnetic field concentrator means comprising:

first and second concentrator rods for being symmetrically positioned adjacent to the conductor in the magnetic field plane, each of the rods having a first end and a second end, the first ends positioned opposite one another with a gap therebetween, and

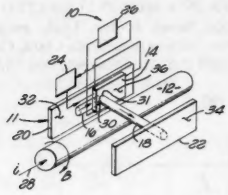
first and second pick-up plates, each attached to the second end of one of the concentrator rods and having its major plane for being positioned parallel to the axis of

the conductor for picking up magnetic field flux along the conductor;

a Hall sensor element positioned in the gap between the concentrator rods in spaced relationship thereto, having a voltage coordinate positioned perpendicular to the magnetic field plane for generating a Hall voltage output across the voltage coordinate;

a Hall current circuit for providing a Hall current along the current coordinate of the Hall sensor element; and

a Hall detection circuit for detecting the Hall voltage output induced by the magnetic field and the Hall current.



4,283,644

DC MOTOR

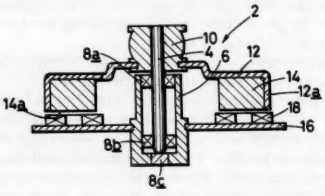
Masayuki Kondo, Kashiwa, and Yoshio Kishi, Hachiouji, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Sep. 20, 1979, Ser. No. 77,180

Claims priority, application Japan, Sep. 22, 1978, 53-117196

Int. Cl.³ H02K *11/00*

U.S. Cl. 310—68 R **19 Claims**



1. In a DC motor including a field magnet having a radially directed annular surface, and at least one coil element in the form of a loop disposed in a plane parallel to said surface, said loop having circumferentially extending portions which are in inner and outer relation in respect to the center of said annular surface, said magnet and each said coil element being relatively rotatable about an axis through said center of the annular surface; the improvement comprising providing each said coil element with a mean radial distance f between said inner and outer circumferentially extending portions which is related to the radial width b of said annular surface of the magnet so that the ratio b/f is within the range of 0.8 to 1.2.

4,283,645

ELECTRICAL DRIVE MOTOR, IN PARTICULAR FOR WATER PUMPS IN THE FIELD OF AQUARIA

Kurt H. Hofmann, Elmur Eulenthal, 5063 Overath, Fed. Rep. of Germany

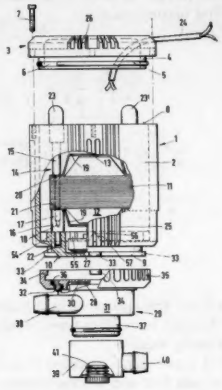
Filed Sep. 11, 1979, Ser. No. 74,712

Claims priority, application Fed. Rep. of Germany, Oct. 6, 1978, 7829842[U]

Int. Cl.³ H02K *5/12*

U.S. Cl. 310—87 **13 Claims**

1. A sealed electrical drive motor, in particular for water pumps in the field of aquaria, the motor comprising a motor shaft, a universally liquid-proof and gas-proof sealed housing including a thin walled diaphragm at one end thereof, a permanent-magnetic coupling including a magnetic member on said motor shaft which acts through said thin-walled diaphragm, an end of said motor housing which is to face a water pump being defined by said thin-walled diaphragm, said thin-walled diaphragm having a planar outer surface which is engageable with a likewise planar, sealed diaphragm surface of a pump casing, and where in vicinity of said thin-walled diaphragm there are provided securing means for connecting said motor housing to a pump casing.



4,283,646

BRUSHLESS ELECTRIC MOTOR

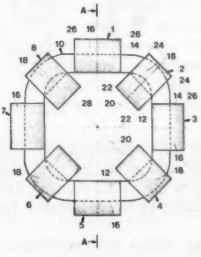
Poul E. Hansen, Guderup, and Jan Dyhr, Horuphav, both of Denmark, assignors to Danfoss A/S, Nordborg, Denmark

Filed Mar. 17, 1980, Ser. No. 131,216

Claims priority, application Fed. Rep. of Germany, Apr. 5, 1979, 2913691

Int. Cl.³ H02K *37/00*

U.S. Cl. 310—126 **13 Claims**



1. A brushless electric motor with an axial air gap relative to a rotary axis thereof, comprising, rotor means and a stator winding coaxial with said rotary axis, first and second sets of alternately arranged U-shaped laminated shoes attached to said stator winding at equal angular spacings, said pole shoes having rectangularly shaped end faces of substantially equal area cooperable with said rotor means with said end faces of said first set of shoes having a radial transverse line of symmetry and said end faces of said second set of shoes having a radial longitudinal line of symmetry, and said first and second sets of shoes having yokes disposed respectively radially outwardly and inwardly of said stator winding.

4,283,647

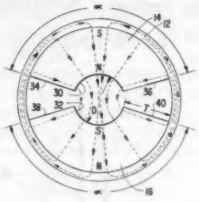
ANNULAR SEGMENT PERMANENT MAGNET SINGLE AIR GAP ELECTRIC MOTOR

John A. Herr, Garwood, and Wolfgang Jaffe, Roselle Park, both of N.J., assignors to The Singer Company, Stamford, Conn.

Filed Aug. 30, 1979, Ser. No. 70,770

Int. Cl.[3] H02K *21/28*

U.S. Cl. 310—154 4 Claims



1. In an electric motor having a solid non-magnetic cylindrical armature with commutated windings thereon, and means rotationally mounting said armature about the cylindrical axis thereof radially within a single air gap formed by peripheral permanent magnets having oppositely polarized pole faces facing the axis of said armature, the improvement wherein said permanent magnets are formed as substantially equal size annular segments concentric with said axis and magnetized radially to said axis, each of said annular segments having an inner diameter D and a thickness T obeying the relationship

$$0.7D<T<1.3D.$$

4,283,648

SYNCHRONOUS ELECTRIC MACHINE WITH SALIENT POLES IN THE ROTOR

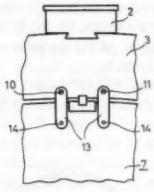
Franz Spirk, Berlin, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jun. 28, 1979, Ser. No. 53,501

Claims priority, application Fed. Rep. of Germany, Jul. 4, 1978, 2829745

Int. Cl.[3] H02K *1/24*

U.S. Cl. 310—269 5 Claims



1. In a synchronous electric machine in the form of a slowly rotating hydroelectric generator having salient poles in its rotor, said poles supported by a ring body which is constructed as a lamination chain from segments and is in turn fastened to the rotor shaft by means of a disc or star shaped hub body, said lamination chain guided by a tangential wedging, with additional parts fastened respectively to the hub body and the lamination chain, one of the fastenings having play, the improvement comprising, the lamination chain fastened to said hub body in such a manner that it will lift off said hub body at a speed above rated speed, and the additional parts being in the form of straps fastened respectively to the hub body and lamination chain at points distributed uniformly around the circumference, with the play at the fastening of said straps corresponding approximately to the mean enlargement of the lamination chain at maximum overspeed, when the lamination chain is lifted off the hub body.

4,283,649

PIEZOELECTRIC ULTRASONIC TRANSDUCER WITH RESONATOR LAMINATE

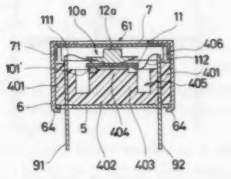
Yoshiaki Heincuchi, Joyo, Japan, assignor to Murata Manufacturing Co., Ltd., Japan

Filed Sep. 13, 1979, Ser. No. 75,275

Claims priority, application Japan, Sep. 21, 1978, 53-130524[U]; Sep. 21, 1978, 53-130525[U]; Sep. 21, 1978, 53-130526[U]; Sep. 28, 1978, 53-133820[U]; Oct. 11, 1978, 53-139803[U]

Int. Cl.[3] H01L *41/08*

U.S. Cl. 310—324 11 Claims



1. An ultrasonic transducer, comprising:

a composite vibrator including a piezoelectric bimorph vibrator and a resin resonator mounted on said bimorph vibrator, said composite vibrator having a first resonance region located in a first frequency range in which said composite vibrator vibrates in a piston vibration mode and a second resonance region located in a second frequency range, higher than said first frequency range, in which said composite vibrator vibrates in a bending vibration mode, said resin and resonator including a protrusion formed on the transducing surface thereof;

an insulating base on which said composite vibrator is mounted, said insulating base including a protruding portion; and

an elastic member interposed between said bimorph vibrator and said insulating base, said elastic member being formed in a ring shape and having a thickness larger than the height of said protruding portion of said insulating base, said protruding portion of said insulating base having an outer diameter slightly smaller than the inner diameter of said ring-shaped elastic member, said ring-shaped elastic member being fitted on said protruding portion of said insulating base such that said elastic member extends above said protruding portion and said bimorph vibrator of said composite vibrator is mounted on said elastic member.

4,283,650

PIEZO-VIBRATOR UNIT CERAMIC PACKAGE WITH INTEGRAL CAPACITOR

Tamotsu Koyama, Kashihara, and Yoshiharu Kuroda, Sakai, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Mar. 16, 1979, Ser. No. 20,982

Claims priority, application Japan, Mar. 16, 1978, 53/34475[U]

Int. Cl.[3] H01L *41/08*

U.S. Cl. 310—344 8 Claims

1. A piezo-electric vibrator assembly comprising:

a ceramic case having sides and a bottom;

a piezo-electric vibrator element disposed within said ceramic case; and

capacitor means formed on the outside of the bottom of said ceramic case, said capacitor means including:

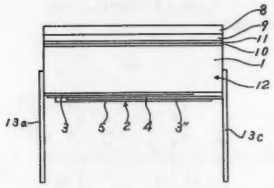
a common electrode formed on substantially the entire outside surface of the bottom of said ceramic case;

a dielectric layer formed on substantially the entire outside surface of the bottom at said case and covering said common electrode, said dielectric layer having a

throughhole formed therein to facilitate access to said common electrode;

a first electrode electrically connected to said piezo-electric vibrator element and formed on said dielectric layer, said first electrode and said common electrode forming a first capacitor;

a second electrode electrically connected to said piezo-electric vibrator element and formed on said dielectric



layer, said second electrode and said common electrode layer forming a second capacitor; and

a third electrode formed on said dielectric layer, said third electrode being electrically connected to said common electrode through said throughhole formed in said dielectric layer;

said first, second and third electrodes being positioned on the bottom of said case to facilitate ease of connection to outside circuitry.

4,283,651

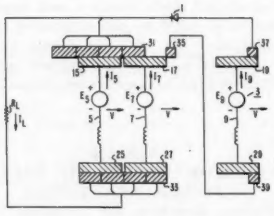
SWITCHING CIRCUIT FOR HIGH CURRENT BRUSHES IN A DYNAMOELECTRIC MACHINE

George T. Hummert, Oakmont; Randall M. Garrett, Murrysville, and Roy D. Schultz, Wilkinsburg, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 25, 1979, Ser. No. 88,309

Int. Cl.[3] **H02K** *27/22*

U.S. Cl. 310—223 **4 Claims**



1. A switching circuit in a DC dynamoelectric machine having a stator and a rotor, conductors in said rotor electrically connected to collector bars, and brushes which intermittently make electrical and physical contact with said collector bars, said switching circuit comprising a first collector bar disposed in the rotor; a first brush disposed to contact said first collector bar; a first auxiliary brush disposed to contact said first collector bar before said first brush separates therefrom; rectifying means electrically connected in a series circuit with said first brush and said first auxiliary brush; and a source of electromotive force which produces a current in said series circuit which is generally equal to the current flowing between said first collector bar and said first brush and which generally forces said current between said first collector bar and said first brush to zero as said first brush separates from said first collector bar.

4,283,652

GAS DISCHARGE LAMP HAVING SUPPORTING TONGUE FORMED FROM ELECTRODE FEEDTHROUGH

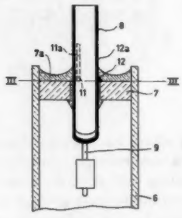
Andre J. B. M. Van Herck, and Gerardus A. P. M. Cornelissen, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 22, 1979, Ser. No. 22,745

Claims priority, application Netherlands, Apr. 10, 1978, 7803763

Int. Cl.[3] **H01J** *61/36*

U.S. Cl. 313—217 **2 Claims**



1. An electric discharge lamp having a tubular ceramic discharge vessel which is closed in a vacuum-tight manner by an end plug, a metal current feedthrough member of an electrode being accommodated in said end plug, said metal current feedthrough member extending outside the discharge vessel through said end plug, said metal current feedthrough further comprising outside of said vessel a positioning means comprising at least one tongue extending outwardly of the feedthrough member and formed by solely disturbing the outer surface metal of the current feedthrough member, said tongue contacting the external surface of said end plug, and sealing glass disposed around said feedthrough member and contacting the exterior surface of said end plug, whereby the longitudinal position of said electrode is maintained during assembly.

4,283,653

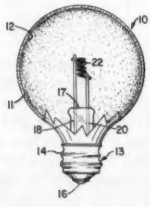
HIGH EMISSIVITY FILAMENT FOR ENERGY CONSERVING INCANDESCENT LAMPS WITH INFRARED RADIATION RETURNING ENVELOPES

Jack Brett, Great Neck, N.Y., assignor to Duro-Test Corporation, North Bergen, N.J.

Filed Sep. 17, 1979, Ser. No. 76,356

Int. Cl.[3] **H01J** *1/15, 19/08;* **H01K** *1/02*

U.S. Cl. 313—341 **12 Claims**



1. A filament for an incandescent lamp of the type which reflects infrared energy produced by the filament back to the filament to reduce the power required to maintain the filament at a predetermined operating temperature said filament comprising

a coil of a wire of refractory metal having an emissivity of at least 0.5 at an operating temperature of above about 2000° K.

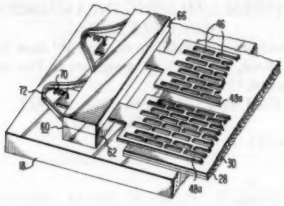
10. An incandescent electric lamp comprising:
an envelope of light transmissive material,
a filament mounted within said envelope which produces energy in the visible and infrared ranges when heated to incandescense, said filament having a length which is substantially less than the dimension of the major axis of the envelope,
means for supplying electrical current to said filament to heat it to incandescense,
means on said envelope for transmitting energy in the visible range and for reflecting energy in the infrared range produced by said filament,
said envelope being shaped such as to reflect by said reflecting means the infrared range energy from all parts of the envelope back onto said filament,
said filament formed by a coil of refractory metal having an emissivity of at least 0.5 at an operating temperature of about 2000° K.

4,283,654

MODULAR TUBE SHADOW MASK SUPPORT SYSTEM

John A. van Raalte, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Apr. 27, 1979, Ser. No. 33,966
Int. Cl.[3] H01J *29/07, 31/20*
U.S. Cl. 313—422 **5 Claims**



1. In a display device having an evacuated envelope with a front wall and a screen on the internal surface of said front wall, an electron generating means, and a segmented shadow mask spaced from said screen, a shadow mask suspension system comprising:
a plurality of elongated support members arranged along said front wall on opposite sides of said screen and substantially parallel to one dimension of said screen, each of said support members including a plurality of slots substantially equally spaced along said one dimension;
said shadow mask including a plurality of segments, each of said segments having mounting tabs at both ends, said tabs being dimensioned substantially equally to said slots and engaging said slots to prevent motion of said segments in said one direction, each of said segments bridging said screen in the other dimension of said screen and said segments cumulatively spanning said screen in said one direction, said support members supporting said segments a predetermined distance above said screen to establish the q spacing of said display device.

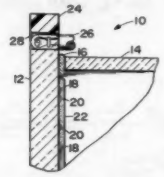
4,283,655

CATHODE RAY TUBE WITH MULTIPLE INTERNAL GRATICULES

Ralph A. Mossman, Portland, and Kenneth R. Stinger, Hillsboro, both of Oreg., assignors to Tektronix, Inc., Beaverton, Oreg.

Filed Oct. 26, 1979, Ser. No. 88,488
Int. Cl.[3] H01J *29/34;* **G01R** *13/20*
U.S. Cl. 313—462 **7 Claims**

1. In a cathode-ray tube having a transparent faceplate carrying a phosphor layer on its inner surface,
means defining a first graticule scale formed beneath said phosphor layer and adjoining said inner surface,
means defining a second graticule scale formed beneath said phosphor layer and adjoining said inner surface, and
user controllable edge lighting means for directing light into said faceplate to illuminate said scales,



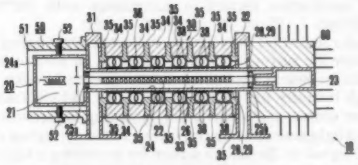
one of said first and second scales being formed in a manner such that it is readily visible in the absence of illumination by said edge lighting means,
the other of said scales being formed in a manner such that it is readily visable only when illuminated by said edge lighting means.

4,283,656

TRAVELING WAVE TUBE DEVICES

Genichi Goto, and Sadamasa Hanihara, both of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Nov. 21, 1979, Ser. No. 96,543
Claims priority, application Japan, Nov. 29, 1978, 53/164371[U]
Int. Cl.[3] H01J *25/34*
U.S. Cl. 315—3.5 **4 Claims**



1. A traveling wave tube device comprising a traveling wave tube including a source of an electron beam, an electron beam collector, a helical delay line disposed between said source of electron beam and said electron beam collector, a pumped envelope surrounding the elements described above, means disposed between said pumped envelope and said helical delay line for supporting the same, a carbonaceous coating applied on said pumped envelope and an electroconductive coating applied on said carbonaceous coating for preventing peeling off thereof; and
a periodic permanent magnet assembly which includes means for a microwave power input and output to and from said traveling wave tube, a plurality of annular permanent magnets and a plurality of pole pieces, said permanent magnets and pole pieces being alternately disposed between the microwave power input and output means, each of said pole pieces having an inner diameter that is smaller than that of the permanent magnets and larger than that of said pumped envelope, adjacent pole pieces and one of the permanent magnets interposed therebetween defining an annular recess, and a plurality troidal metal spring rings contained in each annular recess and in contact with said electroconductive coating and said permanent magnets.

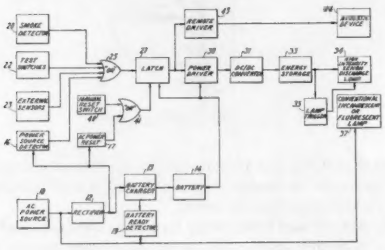
4,283,657
EXIT ILLUMINATING SYSTEM

Joseph H. Gordon, Nanuet, and R. Ramon Bloch, Yonkers, both of N.Y., assignors to Lampiridae Associates, Conn.

Continuation of Ser. No. 670,118, Mar. 25, 1976, abandoned. This application Feb. 16, 1978, Ser. No. 878,467

Int. Cl.[3] **G08B** *17/10*

U.S. Cl. 315—86 **4 Claims**



1. An exit illuminating system for leading persons to an escape route under emergency conditions, comprising:

means for connecting the system to an alternating current power line;

a rectifier circuit for converting said alternating current power into direct current;

a battery;

means connecting said direct current from the rectifier circuit to the battery so as to provide a substantially continuously available charging current to said battery when alternating current is present on said power line, said means including a current control transistor in series between said converted direct current and said battery for controlling the charging current supplied to said battery, and a biasing circuit including said battery connected to said current control transistor in order to bias the degree of conduction thereof in accordance with the battery voltage;

a smoke sensor for developing an electrical activating signal when the surrounding atmosphere in an area to be protected contains a predetermined amount of smoke;

a high intensity light source coupled to said electrical current source and adapted for mounting adjacent an exit, said light source being responsive to the activating electrical signal by the smoke sensor for providing a high intensity illumination sufficiently visible through the smoke in such atmosphere so as to guide persons who may be trapped therein to an escape route via the exit; and

means connecting said battery to said high intensity light source whereby direct current is made available to said light source during both the presence and failure of alternating current on the power line, thereby to render such system fail-safe in the event of power line failure.

4,283,658
PROJECTION LAMP CONTROL ARRANGEMENT

Robert R. Parker, Wheeling, Ill., assignor to Bell & Howell Company, Chicago, Ill.

Filed Jun. 13, 1979, Ser. No. 48,308

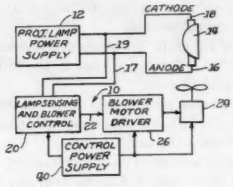
Int. Cl.[3] **H05B** *41/36;* **H01J** *61/52*

U.S. Cl. 315—117 **20 Claims**

1. A control arrangement for accurately maintaining the operating point of a projection lamp in projection apparatus having a projection lamp power supply, the control arrangement comprising:

means having a controllable variable output for providing control of the operating temperature of said projection lamp, said variable output being controllable over a predetermined range of output capacity, and

means responsive to the power input to said projection lamp for controlling operation of said controllable variable output means, said controlling means comprising means for sensing the deviation of said power input of said projection lamp from a predetermined operating point and means responsive to said deviation sensing means for modifying the output of said controllable variable output



means whereby said projection lamp is maintained at a constant operating temperature, said modifying means modifying the output of said controllable variable output means according to a predetermined relationship relating the sensed deviation of said power input and the output of said controllable variable output means.

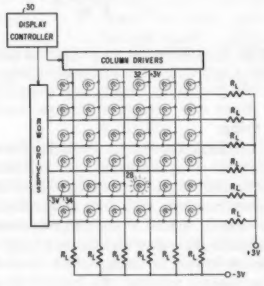
4,283,659
DISPLAY SYSTEM UTILIZING INCANDESCENT LAMP MULTIPLEXING

Howard L. Beckerman, Middletown, and William S. N. Trimmer, Belle Mead, both of N.J., assignors to The Singer Company, Stamford, Conn.

Filed Apr. 7, 1980, Ser. No. 137,927

Int. Cl.[3] **H05B** *39/00*

U.S. Cl. 315—161 **4 Claims**



1. A display system comprising:

a first plurality of column conductors;

a second plurality of row conductors;

a plurality of voltage sensitive light emitting elements arranged at respective intersection points of a matrix array of said row and column conductors;

a first voltage source at a first voltage level;

a second voltage source at a second voltage level differing from said first voltage level by a first voltage difference;

a first plurality of load resistors each connected between a respective one of said first plurality of column conductors and said first voltage source;

a second plurality of load resistors each connected between a respective one of said second plurality of row conductors and said second voltage source; and

means for connecting said first voltage source to one of said row conductors and said second voltage source to one of said column conductors;

whereby the one light emitting element at the intersection point of said one column conductor and said one row

conductor has said first voltage difference applied thereacross to relatively brightly light said one element and the remaining elements all have a second voltage difference less than said first voltage difference applied thereacross to relatively dimly light said remaining elements.

4,283,660

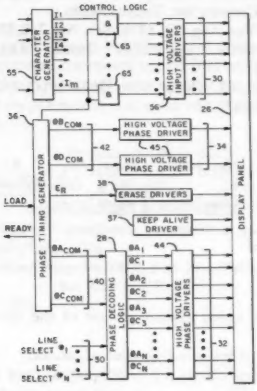
MULTILINE CHARGE TRANSFER PANEL INPUT AND HOLD SYSTEM

John L. Curry, Colorado Springs, Colo., assignor to NCR Corporation, Dayton, Ohio

Filed Aug. 23, 1979, Ser. No. 69,158

Int. Cl.³ H05B *41/30*

U.S. Cl. 315—169.2 **11 Claims**



1. In a multiline plasma charge transfer device wherein the lines each comprise at least one channel containing an ionizable medium, input and transfer electrodes positioned on inside wall surfaces, the transfer electrodes being alternately arranged on opposite wall surfaces, and control means including drivers for firing the electrodes to develop potential differences between the electrodes, application of potential differences serving to introduce charges into the channels, and serving to hold and shift changes in the channels, the improvememt wherein said control means include first drivers for all transfer electrodes on one wall surface of all lines, means for operating said frist drivers in regular phase, independent second drivers for the transfer electrodes on the other wall surface of each line, means for selectively operating each of said second drivers, third drivers connected to the input electrodes of all lines, and means for selectively operating said third drivers.

4,283,661

IRRADIATION DEVICE AND REMOVABLE TIMER USEFUL THEREWITH

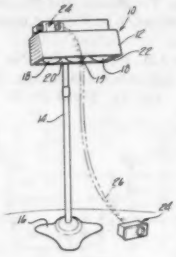
Wendell E. Doty, Battle Creek, Mich., assignor to Battle Creek Equipment Co., Battle Creek, Mich.

Filed Feb. 25, 1980, Ser. No. 124,259

Int. Cl.³ H05B *37/02, 41/36*

U.S. Cl. 315—360 **6 Claims**

1. An irradiation apparatus including: a housing having an opening; a reflector carried within said housing and positioned to reflect radiation within said housing through said opening; means for attaching said apparatus to a source of electrical current; an electrically powered source of ultraviolet radiation located within said housing; and a timing mechanism detachably located within said housing allowing removal of said timing mechanism from said housing, said timing mechanism being an removable and indispensable portion of the circuit between said attachment means and said source of ultraviolet radiation which supplies power to said ultraviolet source so that removal of said timer from said circuit renders said lamp



inoperative even when said attachment means is connected to said source of electrical current.

4,283,662

LINE SCAN CIRCUITS FOR CATHODE RAY TUBE DISPLAYS

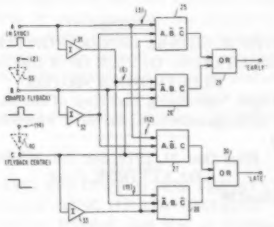
Frank Ainscow, Shawford, and Edward D. Anwyl, Eastleigh, both of England, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 1, 1979, Ser. No. 80,889

Claims priority, application United Kingdom, Aug. 15, 1979, 28391/79

Int. Cl.³ H01J *29/70, 29/72*

U.S. Cl. 315—364 **6 Claims**



1. A line scan circuit for a cathode ray tube display adapted to receive horizontal synchronization pulses and to produce a line scan waveform comprising a phase detector adapted to compare the phase difference between said synchronization pulses and line flyback pulses and to produce an output representing the phase difference,

an integrator adapted to integrate the output of the phase detector and having its output connected to a voltage controlled oscillator,

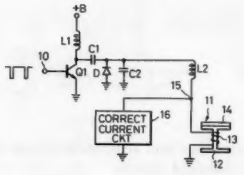
and a line output stage connected to receive the output of said oscillator to produce said flyback pulses,

characterized in that said phase detector is adapted to compare the phases of said synchronization and flyback pulses on both the leading and trailing edges thereof, and to produce phase difference signals therefrom which cause said flyback pulses to be centered on said synchronization pulses.

4,283,663
HORIZONTAL DEFLECTION CIRCUIT IN A TELEVISION DEVICE

Tadayoshi Miyoshi, Yokohama, and Shigeru Kashiwagi, Iwai, both of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Jan. 18, 1979, Ser. No. 4,601
Claims priority, application Japan, Jan. 20, 1978, 53/5169[U]
Int. Cl.³ H01J *29/70*
U.S. Cl. 315—400 **4 Claims**



4. A horizontal deflection circuit in a television device comprising:

a circuit for generating a saw-tooth waveform current for horizontal deflection:

a horizontal deflection coil supplied with the saw-tooth waveform current thus generated;

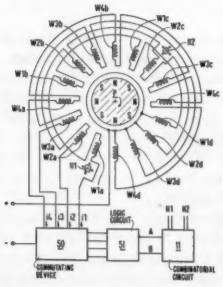
a saturable reactor type linearity coil comprising a first core, a permanent magnet for applying a magnetic field to the first core, and a first winding wound around the first core; and

correction current supplying means comprising a second core electromagnetically coupled with the first core through the permanent magnet, a second winding wound around the second core, and means for supplying to the second winding a current which varies in response to the temperature variation thereby to cause the correction current to flow substantially through the first winding so that the inductance value of the linearity coil will become constant irrespective of the temperature variation.

4,283,664
CONTROL SIGNAL GENERATOR FOR THE COMMUTATING DEVICE OF A BRUSHLESS ELECTRONICS MOTOR

Hermann Ebert, Nuremberg, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Dec. 21, 1979, Ser. No. 105,868
Int. Cl.³ H02K *29/00*
U.S. Cl. 318—138 **10 Claims**



1. A control signal generator for the commutating device of a brushless electronic motor comprising:

(a) two Hall effect generators which are shifted relative to each other by 90° electrically and magnetically and furnish Hall signals as a function of the rotor position;

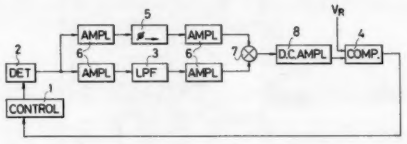
(b) a combinatorial circuit receiving said Hall signals and furnishing two digital drive signals whose switching instants are shifted by half the time span between two successive zero crossings of the Hall signals; and

(c) a 1 to 4 logic circuit having as inputs the two drive signals and having an output which furnishes one control signal for each of the switching elements of the commutating device.

4,283,665
METHOD AND APPARATUS FOR ELIMINATING RIPPLE COMPONENT FROM MOTOR CONTROL LOOP

Katsuzi Mizumoto, Tokorozawa, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Aug. 27, 1976, Ser. No. 718,256
Claims priority, application Japan, Aug. 28, 1975, 50/117591[U]
Int. Cl.³ G05B *5/00;* **H02P** *5/00, 7/00*
U.S. Cl. 318—317 **4 Claims**



1. A motor speed control circuit of the servo loop type, comprising:

(a) a motor drive winding control circuit,

(b) a detection circuit for developing a speed signal proportional to the motor speed, said speed signal comprising a ripple component superimposed on a d.c. component,

(c) a low-pass filter for smoothing the speed signal and simultaneously producing a phase lag therein,

(d) a source of reference voltage proportional to a desired motor speed,

(e) a comparator for producing an output proportional to the difference between the reference voltage and the filtered speed signal,

(f) means for feeding back the comparator output as a control signal to the drive winding control circuit,

(g) a phase leading circuit for advancing the phase of the speed signal by an amount equal to approximately 180 degrees minus the phase lag produced by the low-pass filter,

(h) means coupling the speed signal to the phase leading circuit,

(i) means coupling the output of the phase leading circuit to the comparator, and

(j) means in the comparator for acting on the low-pass filter output and the phase leading circuit output to cancel the ripple component, whereby substantially only the d.c. component of the speed signal is fed back to the drive winding control circuit.

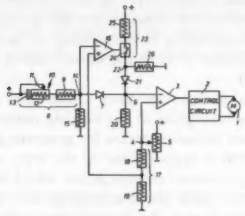
4,283,666
SPEED CONTROL DEVICE FOR A HOME SEWING MACHINE

Patrice J. Kemmel, Stutensee, Fed. Rep. of Germany, assignor to Pfaff Haushaltmaschinen GmbH, Fed. Rep. of Germany

Filed Sep. 17, 1979, Ser. No. 76,381
Claims priority, application Fed. Rep. of Germany, Sep. 15, 1978, 2840208
Int. Cl.³ H05D *5/16*
U.S. Cl. 318—349 **6 Claims**

1. A speed control device for the motor of a sewing machine, comprising, a first control circuit having a variable resistor

connected to the motor, a second control circuit having a constant resistor connected to the motor, selector switching means operatively connecting said first and second control circuits to the motor alternatively when said motor reaches a



given speed, switch means in said second control circuit, and voltage sensor means connected to said first control circuit and to said switching means of said second control circuit for actuating said switch means when said variable resistor reaches a given value.

4,283,667

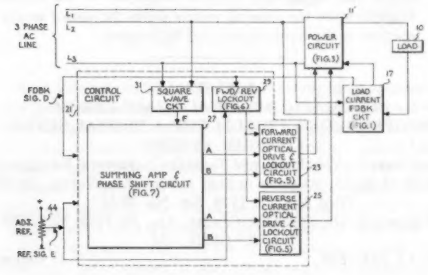
MOTOR FIELD EXCITER

Edward H. Dinger, Waynesboro, Va., assignor to General Electric Company, Salem, Va.

Filed Aug. 14, 1979, Ser. No. 66,591

Int. Cl.³ H02P *5/16*

U.S. Cl. 318—356 **14 Claims**


3 PHASE AC LINE
POWER CIRCUIT (FIG.3)
LOAD
FDBK SIG. D
CONTROL CIRCUIT
SQUARE WAVE CKT
FWD/REV LOCKOUT (FIG.6)
LOAD CURRENT FDBK CKT (FIG.1)
SUMMING AMP & PHASE SHIFT CIRCUIT (FIG.7)
FORWARD CURRENT OPTICAL DRIVE & LOCKOUT CIRCUIT (FIG.5)
REVERSE CURRENT OPTICAL DRIVE & LOCKOUT CIRCUIT (FIG.5)
ADJ. REF.
REF. SIG. E

1. A control circuit for supplying electrical power from an alternating current source to the field winding of an electric motor comprising:

(a) means including a controlled input current path to intermittently connect said winding to said source;

(b) a controlled freewheeling path for carrying field current for a predetermined portion of a period during which the field winding is not connected to said source;

(c) means to sense the value of the actual field current and to provide a first output signal which is a function of said actual field current;

(d) means to provide a second output signal which is a function of the desired field current;

(e) means to combine said first and second output signals and produce a control signal which is a function of the difference between said first and second output signals; and

(f) means to provide coordinated control of said input current path and said freewheeling path in response to said control signal to thereby insure continuous current through said field winding and to make both forward and reverse current-forcing voltages selectively available at said field winding.

4,283,668

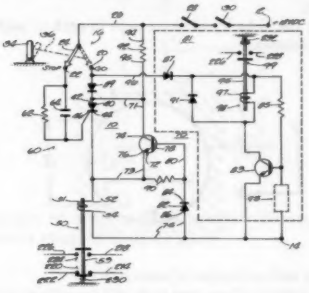
DC MOTOR CONTROL WITH ALTERNATE ACTION SOLENOID DRIVE CIRCUIT

David T. Cavil, Menomonee Falls, Wis., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed Feb. 7, 1979, Ser. No. 10,030

Int. Cl.³ H02P *3/00*

U.S. Cl. 318—549 **17 Claims**



1. An alternate action solenoid drive circuit adapted for connection to a DC source having first and second power terminals, said circuit comprising actuator switch means including go and stop terminals, and an actuator switch connected to the first power terminal and selectively operable for alternately moving between a go position connecting said go terminal to the first power terminal, and an off position connecting said stop terminal to the first power terminal connected to said go terminal, and having a second terminal and a third terminal, a solenoid including a solenoid coil connected in series relation with said first semiconductor switching means between the first and second power terminals, first circuit means connected to and between said stop terminal and said third terminal for applying a trigger pulse to said third terminal when said actuator swich is moved to said off position, and second circuit means connected in circuit with said first semiconductor switching means and said solenoid coil for preventing current flow through said first semiconductor switching means in response to one of said trigger pulses alternate times said actuator is moved to said off position and for allowing a holding current flow through said first semiconductor switching means in response to one of said trigger pulses the other alternate times said actuator is moved to said off position.

4,283,669

PROCESS AND APPARATUS FOR THE AUTOMATIC MEASURING OF A WORKPIECE

Hans-Dieter Jacoby, Werdorf, Fed. Rep. of Germany, assignor to Ernst Leitz Wetzlar GmbH, Wetzlar, Fed. Rep. of Germany

Filed May 22, 1980, Ser. No. 152,371

Claims priority, application Fed. Rep. of Germany, May 25, 1979, 2921166

Int. Cl.³ G05B *19/36*

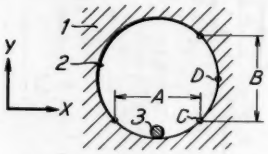
U.S. Cl. 318—578 **4 Claims**

1. A method of automatic measuring of a workpiece mounted on a coordinate table movable with respect to a scanning head in at least two mutually orthogonal coordinate directions by scanning said workpiece by at least obe stylus of said scanning head during movement in one coordinate direction and by maintaining constant a contact pressure of said stylus of said scanning head on said workpiece dependent upon electrical signals proportional to the deflection of said stylus according so the contour of said workpiece said method comprising the steps of:

moving said coordinate table by means of a predetermined

control voltage along a first measuring coordinate direction (primary coordinate) after contacting said workpiece by said stylus of said scanning head by a predetermined force and along a second measuring coordinate direction (secondary coordinate); maintaining the contact pressure between said stylus and said workpiece by moving said coordinate table in said second measuring direction (secondary coordinate) in dependence of a control voltage corresponding to the defelction of said stylus from its base position;

measuring the velocity of movement in each of said coordinate directions;



comparing said velocities of movement;

reversing control of movement in said coordinate directions when said velocities are equal, so that said other coordinate direction movement is at least a relatively constant velocity (equal to the rate of movement in said one direction immediately prior to said switching step) and said one coordinate direction movement is controlled by said contact pressure of said scanning head with said workpiece;

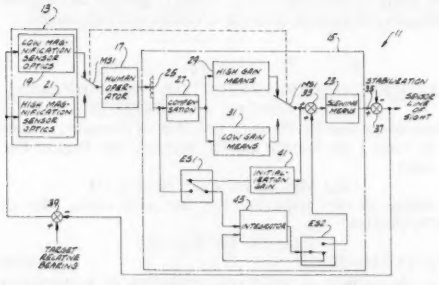
continuing with the above measuring, comparing and switching sequences until the entire workpiece has been measured.

4,283,670

AUTOMATIC INTEGRATOR CONTROL FOR TRANSIENTLESS SWITCHING OF CONTROLLER GAINS IN MANUAL TRACKING SYSTEMS

Tulvio S. Durand, Los Angeles, Calif., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 6, 1979, Ser. No. 27,582
Int. Cl.³ G05B 7/00
U.S. Cl. 318—591 **7 Claims**



1. A manual tracking system for performing target acquisition and tracking under the control of a human operator, said system having a slewable sensor with a line of sight, comprising:

slewing means for slewing said sensor to align said line of sight with a target, the difference between the position of the target and the line of sight being a line of sight error;

display means for displaying the line of sight error to the operator, said display means including means for displaying said line of sight error at a first magnification and means for displaying said line of sight error at a second magnification;

operator controllable magnification selection means for switching the display means from the first to the second magnification, whereby the operator can selectively display the line of sight error at either magnification;

operator controllable input means for generating an input signal corresponding to the slewing of the sensor desired by the operator to align the sensor line of sight with the target; and

control signal means responsive to the input signal for supplying control signals to the slewing means, said control signal means including means for generating a first control signal which is proportional to the input signal and for generating a second control signal which is proportional to the input signal plus its integral, said slewing means being responsive to the first control signal to slew the sensor in proportion to the input signal and being responsive to the second input signal to slew the sensor in proportion to the input signal plus its integral, said control signal means including integrator means for supplying a signal proportional to the integral of the input signal to the slewing means when the line of sight error is displayed at the second magnification;

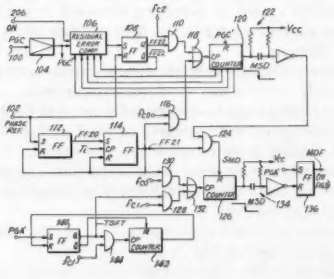
said control signal means also including control switching means governed by the operator controllable magnification selection means for automatically switching the control signal means from supplying the first control signal to supplying the second control signal substantially simultaneously with the switching of the display means from the first to the second magnification, whereby when the line of sight error is displayed at the first magnification the slewing means slews the sensor in proportion to the input signal and when said error is displayed at the second magnification the slewing means slews the sensor in proportion to the input signal plus its integral.

4,283,671

AUTOMATIC RESIDUAL PHASE ERROR COMPENSATION CIRCUIT FOR A DIGITAL SERVO CONTROL SYSTEM

Kenji Nakano, Yokohama, and Tadahiko Nakamura, Kanagawa, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Aug. 28, 1979, Ser. No. 70,517
Claims priority, application Japan, Aug. 30, 1978, 53-104900
Int. Cl.³ G05B 1/01
U.S. Cl. 318—608 **11 Claims**



1. A servo control apparatus for controlling rotation of a rotary member comprising:

means for driving said rotary member;

means for generating an angular position signal related to an angular position of said rotary member;

means for generating a reference signal related to a desired angular position of said rotary member;

means for detecting a time interval related to a time between said angular position signal and said reference signal;

means for controlling said means for driving in accordance with said detected time interval whereby phase control of said rotary member is achieved; and

means for eliminating residual phase errors by changing a timing of one of said angular position signal and said reference signal in response to said detected time interval.

4,283,672

STEPPER MOTOR DRIVE

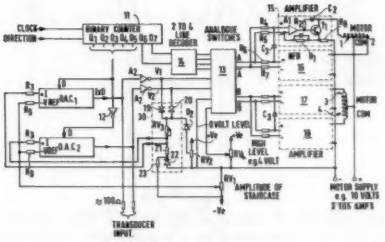
Raymond W. Throssell, Partridge Green, England, assignor to The Monotype Corporation Limited, Redhill, England

Filed Dec. 7, 1979, Ser. No. 101,064

Claims priority, application United Kingdom, Dec. 18, 1978, 48950/78

Int. Cl.³ G05B *19/40*

U.S. Cl. 318—696 **6 Claims**



1. A stepper motor drive which is arranged to sequentially energise the windings of a stepper motor, the drive including at least one generator of a staircase signal comprising a multiplier fed by a reference signal and the output of a clocked binary counter, an adjustable feedback network which is arranged to combine a fraction of the output of the mutliplier with the reference signal, so that the output of the multiplier represents unequal steps of a staircase waveform, and a switching network which under the control of the counter applies to the windings drive signals in accordance with the output of the multiplier.

4,283,673

MEANS FOR REDUCING CURRENT-GAIN MODULATION DUE TO DIFFERENCES IN COLLECTOR-BASE VOLTAGES ON A TRANSISTOR PAIR

J. Darryl Lieux, San Jose, Calif., assignor to Signetics Corporation, Sunnyvale, Calif.

Filed Dec. 19, 1979, Ser. No. 105,418

Int. Cl.³ G05F *1/56*

U.S. Cl. 323—316 **4 Claims**

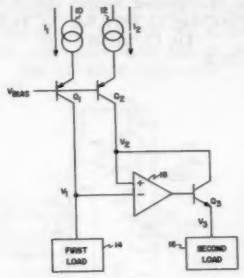
1. A transistor circuit, comprising:

(a) a pair of transistors each having an emitter, base and collector, with their bases connected in common,

(b) current supply means for supplying substantially equal current to the emitters of said transistors,

(c) a load coupled separately to each collector of said transistors, and

(d) means coupled between the collectors of said transistors and between the collector of one of said transistors and the load coupled thereto for maintaining the collector-base



voltages of said transistors substantially equal and their current gains substantially equal.

4,283,674

CONSTANT VOLTAGE OUTPUT CIRCUIT

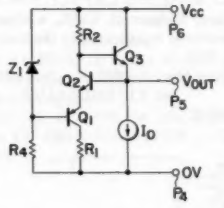
Yasuo Kominami, Kokubunji; Masahiro Yamamura, Kodaira; Katsuji Mizumoto, and Toshihide Hanada, both of Sayama, all of Japan, assignors to Hitachi, Ltd. and Pioneer Electronic Corp., both of Tokyo, Japan

Filed Jul. 19, 1979, Ser. No. 59,030

Claims priority, application Japan, Jul. 19, 1978, 53-87177

Int. Cl.³ G05F *3/18*

U.S. Cl. 323—313 **6 Claims**



1. A constant voltage output circuit comprising:

first and second power source terminals for supplying a power source voltage;

a series circuit consisting of a first pnp transistor and a first npn transistor, each having its emitter connected to the emitter of the other;

means for connecting the collector of said first pnp transistor to said first power source terminal;

load means interposed between the collector of said first npn transistor and said second power source terminal;

a second npn transistor having its base connected to the collector of said first npn transistor, its collector connected to said second power source terminal and its emitter connected to the base of said first npn transistor as well as connected to said first power source terminal via second load means;

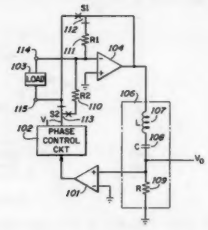
reference voltage feed means for impressing a reference voltage across the base of said first pnp transistor and said second power source terminal; and

an output terminal connected to the emitter of said second npn transistor, thereby providing a constant output voltage across it and said second power source terminal.

4,283,675
IMPEDANCE/ADMITTANCE MEASURING CIRCUIT

Richard G. Sparber, Wheaton, Ill., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Mar. 12, 1979, Ser. No. 19,367
Int. Cl.³ G01R *27/26*
U.S. Cl. 324—57 R **11 Claims**



1. A circuit arrangement for measuring the electrical characteristics of a connected load comprising:

generator means for generating an excitation signal having a fixed amplitude and for applying said excitation signal to said load;

filter means connected to said generator means and responsive to signals received from said load for generating a filtered response signal; and

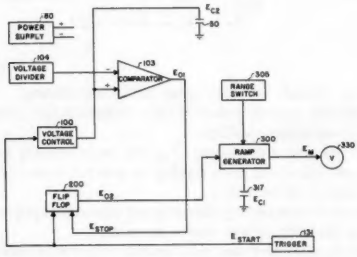
isolating coupler means for coupling said signals from said load to said filter means and for isolating said load from the loading effects of said filter means;

said generator means being responsive to said filtered response signal to generate said excitation signal.

4,283,676
DIRECT READING CAPACITANCE METER

Clifford O. Shaw, Ridgecrest, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 6, 1980, Ser. No. 127,707
Int. Cl.³ G01R *11/52*
U.S. Cl. 324—60 C **5 Claims**



1. A device for measuring the value of a capacitor comprising:

terminal means for connecting a test capacitor;

a voltage divider that receives an initial voltage and transmits a predetermined reference voltage;

sensing means connected to the output of said terminal means and to said voltage divider;

control means for transmitting a voltage to said sensing means and to said terminal means;

switching means for receiving and sending a first signal, and further for receiving and sending a second signal;

a ramp generator having a plurality of charging ranges connected to said switching means to receive a first signal and to supply a voltage and further, to receive a second signal and to stop supplying a voltage;

a reference capacitor connected to said ramp generator;

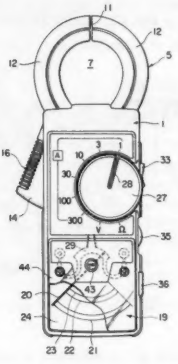
a capacitance reading meter effectively connected to said reference capacitor;

a trigger having a first and a second mode such that in said first mode no voltage is transmitted and in said second mode a voltage is transmitted simultaneously to said switching means and to said control means, wherein the value of a capacitor is directly determined.

4,283,677
CLAMP TYPE GALVANOMETER

Shoji Niwa, 234 Gumyoji-cho, Minami-ku, Yokohama, Japan (233)

Filed May 18, 1979, Ser. No. 40,324
Int. Cl.³ G01R *1/22*
U.S. Cl. 324—127 **4 Claims**



1. A clamp type galvanometer, comprising:

(a) current transformer means (**5**) including a core assembly of laminated plates made of an alloy of about 78.5% nickel and about 21.5% iron, said core assembly being split to provide two half core segments (**8**), said segments being pivotally secured at one end and overlapping each other at the other end, a portion of each plate where a coil is to be wound being reduced in width;

(b) a coil (**9**) wound around each segment at such reduced width portion;

(c) a shield plate (**10**) disposed over each coil;

(d) a lever (**14**) for opening or closing the overlapping other end of said segments;

(e) a case wherein said one end of said segments are pivotally secured, said case being of a size carriable with one hand, said lever extending out of said case;

(f) a meter assembly (**19**) with a pointer and graduations for indicating the output of said current transformer means displayed on said case, and including first circuit means with current measuring means operatively coupled to said current transformer means (**5**) to indicate the output of said current transformer means with said pointer and graduations;

(g) a printed circuit (**25**) having shunt circuit means in said meter assembly for measuring various ranges of current;

(h) a circular switching knob (**27**) coupled to said shunt circuit means for operating said printed circuit so as to determine the measuring range being measured; and,

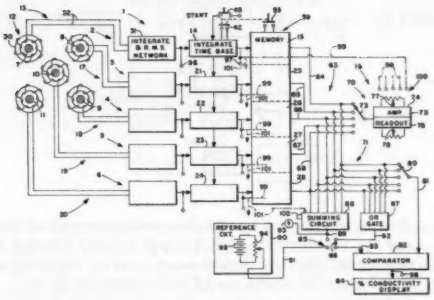
(i) a lock bar (**29**) disposed for being in contact with or separate from said pointer with a second knob (**33**) for operating said lock bar, said second knob being at the side of the case.

4,283,678

CABLE CONDITION ANALYZING SYSTEM FOR ELECTRIC ARC FURNACE CONDUCTORS

Matthew R. Halter, Bay Village, Ohio, assignor to Watteredge-Uniflex, Inc., Avon Lake, Ohio

Filed Jun. 5, 1978, Ser. No. 912,342
Int. Cl.[3] G01R *19/02, 31/02*
U.S. Cl. 324—140 R 28 Claims



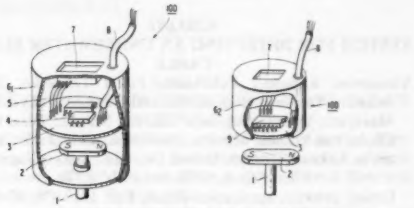
1. For use with electric arc furnaces or the like usually provided with multiple phase electrical power and having for each phase plural electrical cables that ordinarily conduct relatively large electrical currents and encounter current fluctuations during operation, a system for sensing current flow for use in analyzing the condition of all of such electrical cables serving a respective phase, comprising input means for simultaneously producing a plurality of representative electrical signals indicative, respectively, of the electrical currents carried by such plurality of cables, said input means comprising a separate input means for each of the cables being monitored by the system and each input means including a respective transducer that produces an output voltage representative of the change of current flowing through a monitored cable with respect to time and means for producing such representative electrical signals from such output voltages, timed means including a plurality of timed integrator means for respectively integrating simultaneously each of said representative electrical signals for a period of time to produce respective integrated signals, said timed integrator means comprising a separate one of the same for each of the cables analyzed by the system, each including an integrator circuit and timer means for delivering to said integrator circuit for a selected period of time said representative electrical signal for integration by said integrator circuit, means for coupling each integrator circuit to said input means, memory means for storing a plurality of stored signals, each being indicative of a respective integrated signal, means for coupling said memory means to said integrator circuits, and means for making a comparison between at least one of said stored signals representing the electrical signal carried by at least one such cable at a given time and at least another one of said stored signals representing the electrical signal carried by at least another such cable at the same time, said means for making a comparison including read-out means selectively operable for producing output information respresentative of said stored signals, and display means for displaying the output from said read-out means.

4,283,679

ROTATIONAL DIRECTION DETECTION DEVICE FOR A MOTOR OR THE LIKE

Susmu Ito, and Morimasa Nagao, both of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Apr. 18, 1979, Ser. No. 31,094
Claims priority, application Japan, Apr. 18, 1978, 53-46135
Int. Cl.[3] G01P *3/52, 13/00*
U.S. Cl. 324—165 5 Claims



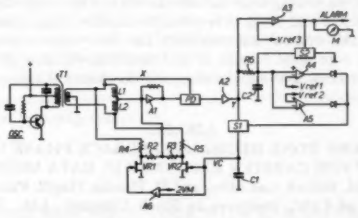
1. A rotational direction detection device comprising a single permanent magnet rotatable in response to the rotation of a rotary shaft of a rotary object for generating a rotating magnetic field in a first plane substantially perpendicular to the rotary shaft; a magnetic field sensor disposed in a second plane parallel to and adjacent said first plane and spaced from said shaft, and having a plurality of ferromagnetic magnetoresistive elements lying in said second plane so as to be responsive to said rotating magnetic field for generating an output representative of the rotation of said rotary shaft, at least two of said elements being arranged within said second plane to form an angle other than 0 degree, 90 degrees, 180 degrees and 270 degrees; and a rotary condition detector responsive to the output of said magnetic field sensor for determining the rotational direction of said rotary shaft.

4,283,680

ELECTRICAL BRIDGE BALANCING CIRCUIT

Bruce G. Kerr, Amersham, England, assignor to Goring Kerr Limited, Windsor, England

Filed Feb. 26, 1979, Ser. No. 15,013
Int. Cl.[3] G01N *27/72;* G01R *33/12*
U.S. Cl. 324—234 12 Claims



1. An electrical sensing circuit comprising:
bridge circuit means including an electrical bridge and sensing means for producing an output signal which is a function of the in or out of balance condition of the bridge;
storage means for storing the value of said output signal;
balancing means responsive to said storage means for applying a balancing signal to said bridge circuit means for tending to cause said output signal to represent a balanced condition of the bridge, the value of said balancing signal being a function of the value of said output signal stored by said storage means;
threshold means responsive to said output signal for produc-

ing a switch control signal which assumes a first state when the value of said output signal changes at less than a predetermined rate to exceed a predetermined threshold;

switching means responsive to said switch control signal for applying said output signal to said storage means when said control signal is in said first state to modify the stored value of said storage means; and

alarm means for providing an alarm signal in response to said output signal changing at a rate greater than said predetermined rate to exceed a given level.

4,283,681

SYSTEM FOR DETECTING AN UNDERWATER BURIED CABLE

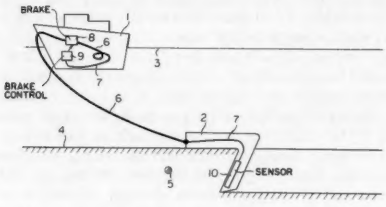
Yamamura Kazuomi, Yokohama; Fukui Takasuke, Tokyo; Iwamoto Yoshinao, Fujimi; Shirasaki Yuichi, Tokyo; Fujise Masayuki, Yamato; Sugimoto Hikoaki, Mitaka; Shirai Kikuo, Chofu, and Yoshida Minoru, Yokohama, all of Japan, assignors to Kokusai Denshin Denwa Co., Ltd., Tokyo, Japan

Filed Feb. 9, 1979, Ser. No. 10,798

Claims priority, application Japan, Feb. 16, 1978, 53-15950; Mar. 9, 1978, 53-26035; May 6, 1978, 53-53308

Int. Cl.[3] **G01V** *3/11, 3/165;* **B63B** *21/66;* **F16L** *1/00*

U.S. Cl. 324—326 **12 Claims**



1. A cable detecting system comprising a cable ship, a cable detector having at least a body and a blade fixed to said body for dredging a sea bottom, a towing wire connected between said cable ship and said cable detector for towing the cable detector, a signal wire provided between said cable ship and said cable detector, and said cable detector dredging the water bottom to find a buried cable characterized in that said cable detector has a cable sensor which generates an electrical signal upon detection of the presence of a cable, said electrical signal is transmitted to said cable ship through said signal wire in said towing wire, said cable ship has at least a brake for selectively holding the towing wire and a brake control for controlling the operation of said brake in response to said electrical signal, and said brake control automatically has the brake release the towing wire upon receipt of said electrical signal to stop the cable detector and avoid damage to the detected cable.

4,283,682

ERASURE ZONE DECISION FEEDBACK PHASE LOCK LOOP FOR CARRIER RECOVERY IN DATA MODEMS

Bruce M. Sifford, Los Altos, and D. Thomas Magill, Palo Alto, both of Calif., assignors to Ricoh Company, Ltd., Tokyo, Japan

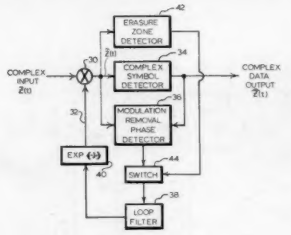
Filed Apr. 6, 1979, Ser. No. 27,982

Int. Cl.[3] **H03D** *3/18*

U.S. Cl. 329—50 **6 Claims**

1. In a feedback phase-lock loop of the type used in data communications systems transmitting constellation encoded data and including a demodulating multiplier for receiving the transmitted complex input signal and multiplying it by a feedback signal to develop a demodulated complex input signal, a complex symbol detector for detecting the particular constellation point received, a modulation removal phase detector which compares the demodulated complex input signal to the detected signal and generates a difference signal proportional to the difference therebetween, a loop filter which serves to smooth out differences between successive difference signals input thereto, and an exponential circuit responsive to said filtered difference signals and operative to develop said feedback signal for input to the demodulating multiplier, the improvement comprising:

an erasure zone detector for monitoring the output of said demodulating multiplier and for determining whether or not the demodulated complex input signal falls within one of a predetermined number of erasure zones lying within



the complex plane of a particular modulation constellation and for developing a switch control signal when it is determined that the demodulated complex input signal does in fact fall within one of said erasure zones; and

switching means responsive to said switch control signal and operative to interrupt the input of said difference signals into said loop filter and to thereby prevent adjustment of said feedback signal when the coordinates of a demodulated complex input signal falls within one of said erasure zones.

4,283,683

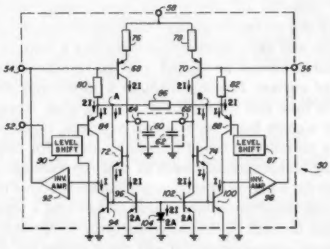
AUDIO BRIDGE CIRCUIT

William E. Main, Mesa, Ariz., assignor to Motorola Inc., Schaumburg, Ill.

Filed May 29, 1979, Ser. No. 42,734

Int. Cl.[3] **H03F** *3/26*

U.S. Cl. 330—262 **18 Claims**



1. Audio bridge circuit having an input terminal, first and second output terminals, comprising:

amplifier means coupled between the input and first and second output terminals of the audio bridge circuit for amplifying input signals applied to the input terminal and providing the amplified signals across the first and second output terminals, said amplifier means including current mirror circuit means for setting both the first and second output terminals at a predetermined quiescent dc bias potential level the magnitude of which is substantially equal to one-half the magnitude of a first operating potential supplied to the audio bridge circuit;

feedback circuit means having first and second inputs connected to the first and second output terminals of the audio bridge circuit respectively, said feedback circuit

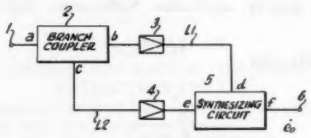
means being responsive to a direct current offset voltage appearing at said first and second inputs thereof for providing a feedback signal to said amplifier means to cause said direct current offset voltage to be severely reduced.

4,283,684

NON-LINEARITY COMPENSATING CIRCUIT FOR HIGH-FREQUENCY AMPLIFIERS

Gunkichi Satoh, Yokohama, Japan, assignor to Kokusai Denshin Denwa Co., Ltd., Tokyo, Japan

Filed Apr. 16, 1979, Ser. No. 30,361
Claims priority, application Japan, Apr. 17, 1978, 53/44138
Int. Cl.³ H03F *1/32, 3/16*
U.S. Cl. 330—277 **14 Claims**



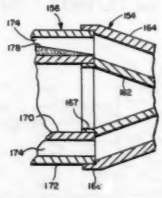
1. A non-linearity compensating circuit for high-frequency amplifiers, comprising a pair of parallel channels each having a high-frequency amplifier of similar characteristics, branching means for branching the input signal so that the input signal is coupled to the two inputs of said pair of parallel channels, and synthesizing means for taking a vectorial sum of the two output signals from said channels, said high-frequency amplifier included in one of said channels being operable up to the non-linear region of the input/output characteristics, and said high-frequency amplifier included in the other of said channels being operable within the linear region of the input/output characteristics, said branching means and said synthesizing means being parallel-line-couple-type directional couplers, the effective electric length between the input and output of one of the said pair of channels being longer by about π radians than the effective electric length between the input and output of the other channel by selecting the transmission coefficients of said parallel-line-couple-type directional couplers, whereby the non-linear input/output characteristics of the whole circuit is approximately the opposite of the input/output characteristics of the high-frequency amplifier to be compensated which is serially connected to the non-linearity compensating circuit.

4,283,685

WAVEGUIDE-TO-CYLINDRICAL ARRAY TRANSITION

George H. MacMaster, Lexington, and Lawrence J. Nichols, Burlington, both of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed Dec. 13, 1979, Ser. No. 102,819
Int. Cl.³ H03F *3/60*
U.S. Cl. 330—286 **6 Claims**



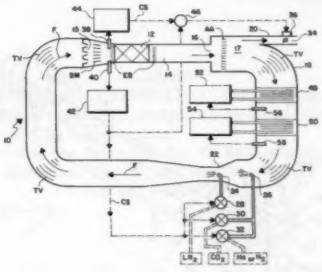
1. A waveguide distribution system comprising:
a waveguide
a generally conically-shaped element positioned in said waveguide, an axis of said element being parallel to an axis of said waveguide, said element being electrically conductive;
a plurality of transmission lines having ports arranged circumferentially around a base portion of said conically-shaped element and positioned between the conical surface of said element and a wall of said waveguide; and
alternate ones of said transmission lines including 180° phase shifters for inhibiting the radiation of radiant energy from said transmission lines in directions normal to the nominal directions of propagation of radiant energy within said transmission lines.

4,283,686

LASER OPERATION WITH CLOSED GAS AND TUNED DUCT PULSING

Jack D. Daugherty, Winchester; Arthur R. Kantrowitz, Cambridge; George W. Sutton, Lexington, and Oswald L. Zappa, Stoneham, all of Mass., assignors to Avco Everett Research Laboratory, Inc., Everett, Mass.

Filed Mar. 21, 1979, Ser. No. 22,259
Int. Cl.³ H01S *3/05*
U.S. Cl. 331—94.5 G **8 Claims**



1. Gas laser apparatus comprising:
means defining an optical resonant cavity having a gas inlet and a gas outlet within a substantially closed loop flow path for a lasable gas having gas laser states,
means for cyclically pumping the gas laser states within the cavity to produce lasing action and excess energy, in turn cyclically producing pressure waves therein,
means for coupling said lasing action out of said cavity,
means within said closed loop flow path for utilizing said pressure waves to cyclically pump gas around the closed loop gas flow path, and
means within said closed loop flow path to cool the pumped gas to limit heat build-up therein over the course of multiple pumping cycles.

4,283,687

FREE ELECTRON LASER WITH END TAPERED WIGGLER STRENGTH

John M. J. Madey, Palo Alto; Luis R. Elias, Mountain View, and Todd I. Smith, Palo Alto, all of Calif., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jul. 27, 1979, Ser. No. 61,557
Int. Cl.³ H01S *3/09, 3/14*
U.S. Cl. 331—94.5 PE **1 Claim**

1. In a free electron laser the improvement residing in a periodic magnet means said magnet means comprising
coaxial bifilar helical conductor means, bifilar conductors being 180° displaced and conducting current in opposite directions, said bifilar helical conductor means comprising

multiple layers of said bifilar conductors each successive layer thereof extending an increment beyond its anteced-

ent layer to effect a uniform tapered termination configuration, and

a current source connected to supply current thereto.

4,283,688

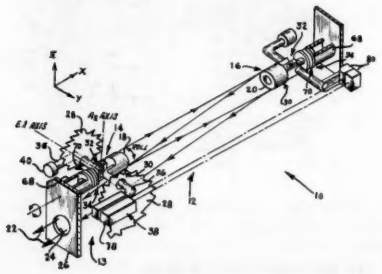
LASER AUTOALIGNMENT SYSTEM

Wayne B. Lloyd, Baltimore, Md.; Robert J. Bernhard, Ames, Iowa; Dale R. Logan, Columbia, and Ronald W. Minarik, Lutherwille, both of Md., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Nov. 26, 1979, Ser. No. 97,594

Int. Cl.³ H01S *3/05*

U.S. Cl. 331—94.5 D **16 Claims**



1. In a laser having a pair of end walls and a pair of side walls defining a laser cavity and an optical resonator located within said laser cavity bounded at opposed ends thereof by a first and second reflecting element, the improvement therein residing in a laser autoalignment system capable of providing six degrees of freedom of movement to said first and second reflecting elements, said autoalignment system comprising a first and a second reflector assembly disposed at opposite ends of said laser cavity, said first reflector assembly incorporating therein said first reflector element and said second reflector assembly incorporating therein said second reflector element, each of said first and second reflector assemblies comprising a reflector unit, a gimbal knuckle joint and a translator mechanism, said reflector unit having mounted on one end thereof one of said reflector elements, a pair of appendages protruding from each side of said reflector unit, each of said appendages passing through an opening located in each of said side walls, respectively, of said laser, at least one of said appendages having means connected to an end thereof and located outside of said laser cavity for aligning said reflector assemblies and means located within each of said openings in said side walls for sealing said opening between said appendage and said side wall, said gimbal knuckle joint having means at one end thereof for operably connecting the other end of said reflector unit to said gimbal knuckle joint for two degrees of freedom of movement with respect thereto, said translator mechanism having means at one end thereof for operably connecting the other end of said gimbal knuckle joint thereto for four degrees of freedom of movement with respect thereto, said translator mechanism being fixedly secured at the other end thereof to one of said end walls of said laser, means operably connected to said translator mechanism, said gimbal knuckle joint and said reflector unit for moving each of said reflector assemblies in said six degrees of freedom, and said alignment means on each of said reflector assemblies being in operable relationship with one another so as to provide signals to said moving means thereby enabling said moving means to provide each of said reflector assemblies with said six degrees of movement in accordance with said signals.

4,283,689

MICROWAVE OSCILLATOR CIRCUIT WITH IMPROVED EFFICIENCY

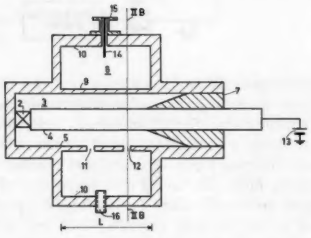
Hindrik Tjassens, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 17, 1979, Ser. No. 39,717

Claims priority, application Netherlands, Jun. 20, 1978, 7806617

Int. Cl.³ B41J *27/00*

U.S. Cl. 331—101 **6 Claims**



1. A microwave oscillator circuit comprising a transmission line having an inner conductor and an outer conductor, said inner and outer conductor being terminated at one end by a diode having a negative resistance for generating oscillations at a frequency f_o and at the other end by a terminal impedance which corresponds to the characteristic impedance of the transmission line, a cavity resonator coupled to said transmission line between said diode and said terminal impedance, said cavity resonator having an inner wall at least partially common with said outer conductor, said inner wall including a first impedance coupling between said transmission line and said cavity resonator and a second impedance coupling between said transmission line and said cavity resonator, said first and second impedance coupling being spaced from one another by an odd number of quarter wavelengths at said frequency toward said terminal impedance.

4,283,690

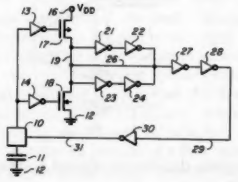
LOW POWER CMOS OSCILLATOR

Jean-Claude Tarbouriech, Ville-la-Grand, France, assignor to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 31, 1979, Ser. No. 108,913

Int. Cl.³ H03K *3/354*

U.S. Cl. 331—111 **9 Claims**



1. A CMOS oscillator having a first and a second power supply node, comprising: a first and a second series connected

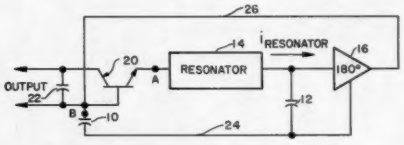
transistor being coupled between the first and second power supply node, the first and the second transistor each having a control electrode; a first and a second inverter each having an input and an output, the inputs being coupled together and the output of the first inverter being coupled to the control electrode of first transistor, the output of the second inverter being coupled to the control electrode of the second transistor; a third inverter coupled to a node formed between the first and second transistors, the third inverter having an output coupled back to the node formed between the first and second transistors; a fourth inverter having an input coupled to the output of the third inverter, the fourth inverter providing an output; a fifth inverter having an input coupled to the output of the fourth inverter and providing an output coupled to the inputs of the first and second inverters; and a capacitor coupled from the inputs of the first and second inverters to the second power supply node.

4,283,691

CRYSTAL OSCILLATOR HAVING LOW NOISE SIGNAL EXTRACTION CIRCUIT

John R. Burgoon, Campbell, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed May 29, 1979, Ser. No. 43,591
Int. Cl.³ H03B *5/36*
U.S. Cl. 331—116 R **9 Claims**



9. A method of minimizing the noise power in the output signal from a Colpitts type resonator oscillator, including a resonator, the method comprising the steps of:

serially applying the current through the resonator of a Colpitts type oscillator to an active device that presents a low impedance load to the resonator to use the filtering effect of the resonator to minimize the oscillator loop noise component in the output signal; and

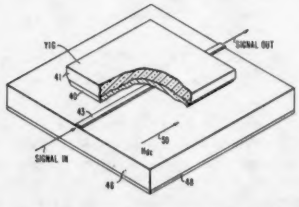
connecting a selected load impedance to the active device for developing the output signal thereacross, the output signal being isolated from the oscillator loop and having a selected signal to noise ratio to further minimize the noise component in the output signal.

4,283,692

MAGNETOSTATIC WAVE SIGNAL-TO-NOISE-ENHANCER

John D. Adam, Murrysville, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 27, 1979, Ser. No. 61,537
Int. Cl.³ H01P *1/23*
U.S. Cl. 333—17 L **10 Claims**



1. A magnetostatic wave signal-to-noise enhancer comprising:

(a) a magnetostatic wave supporting material;

(b) a microwave transmission line, having first and second ends, and being contiguous said material to launch magnetostatic waves thereinto;

(c) input means coupled to one end of said transmission line for applying an input signal within an operating frequency range;

(d) output means coupled to the other end of said transmission line;

(e) magnetic means biasing said material for magnetostatic wave operation wherein at relatively low power levels of input signal, launched magnetostatic waves remove power from said transmission line resulting in attenuation of said signal and

past a certain critical input signal power level said power removed by said magnetostatic waves is reduced relative to said input signal power, resulting in a relative reduction of said attenuation; and

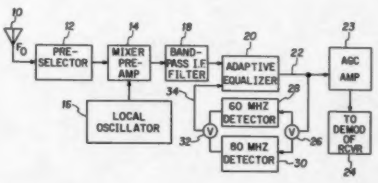
(f) means for preventing launched magnetostatic waves from reflecting from the edges of said thin film material back to said transmission line.

4,283,693

AMPLITUDE TILT COMPENSATING APPARATUS

Eliseo Saenz, Garland, Tex., assignor to Rockwell International Corporation, El Segundo, Calif.

Continuation of Ser. No. 4,089, Jan. 17, 1979, abandoned. This application May 19, 1980, Ser. No. 150,861
Int. Cl.³ H03H *7/03*
U.S. Cl. 333—18 **1 Claim**



1. Apparatus of the class described comprising, in combination:

adaptive equalizer means having a gain characteristic which varies as a function of frequency over a predetermined band of frequencies, including control signal responsive variable impedance means, for passing a signal therethrough which may have an amplitude slope other than zero for the frequencies in said band, said control signal responsive variable impedance means comprising a tuned filter having only low-pass and bandpass characteristics including a pin diode as a variable resistance element in an inductive portion of the tuned filter circuit and the pin diode is utilized to vary the Q of said tuned filter circuit;

detection means, connected to an output of said adaptive equalizer means, for detecting the relative amplitude of signals occurring at at least two different frequencies in the band; and

first means, connected between said adaptive equalizer means and said detection means, for generating a feedback signal to vary the value of said impedance means whereby a spectrum envelope of signals output by said adaptive equalizer means is modified to have substantially a zero amplitude slope.

4,283,694

IMPEDANCE-MATCHING NETWORK REALIZED IN MICROSTRIP TECHNIQUE

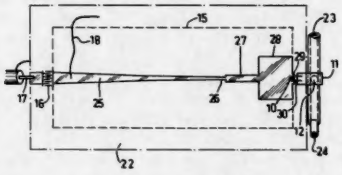
Vlad Pauker, Bievres, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 9, 1979, Ser. No. 55,579

Claims priority, application France, Jul. 11, 1978, 78 20678

Int. Cl.³ H01P *5/02*

U.S. Cl. 333—34 **3 Claims**



1. An impedance-matching micro-strip network for matching a predetermined impedance to a lower impedance over a wide frequency band, comprising a tapered line section for transposing the predetermined impedance to a higher impedance and at least one quarter wave line section on the narrow end of said tapered line section for transposing this higher impedance to the lower impedance.

4,283,695

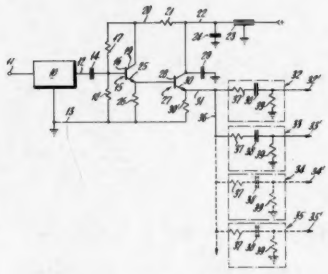
HIGH ISOLATION MULTICOUPLING APPARATUS

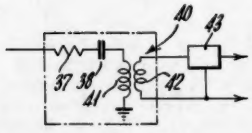
Aldo M. Scandurra, 22 Monett Pl., Greenlawn, N.Y. 11740

Filed Jun. 27, 1979, Ser. No. 52,410

Int. Cl.³ H03H *11/36*

U.S. Cl. 333—124 **5 Claims**





1. A multicoupler for coupling a single energy source to at least two or more utilization devices such as receivers and the like comprising a matching network having an input connected to said source and an output, a substantially frequency insensitive amplifier having a high input impedance and a very low output impedance, a connection between said matching network and the input of said amplifier, and at least two passive isolation networks each having an input directly connected to the output of said amplifier and an output for connection to a utilization device whereby the output impedance of the amplifier is the only impedance viewed by the isolation networks, said isolation networks each including a series resistance connected between the last said input and the last said output, said passive networks constituting the sole load on said amplifier and producing outputs having substantially matched amplitude and phase characteristics, each of said passive networks further including a parallel impedance in the form of the primary of an impedance transformer in shunt with the last said output.

4,283,696

METHOD AND CIRCUIT ARRANGEMENT FOR THE OPERATION OF RECURSIVE FILTER CIRCUITS OR ANALOG STORAGE CIRCUITS CONSTRUCTED ACCORDING TO THE CHARGE COUPLED DEVICE (CCD) PRINCIPLE

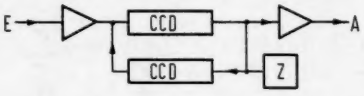
Karl Goser, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Aug. 27, 1979, Ser. No. 69,790

Claims priority, application Fed. Rep. of Germany, Sep. 26, 1978, 2841832

Int. Cl.³ H03H *17/04;* **G11C** *27/00*

U.S. Cl. 333—165 **3 Claims**



1. A method of operating recursive filters utilizing charge coupled devices having plural storage cells comprising the steps of storing in first alternate storage cells of said charge coupled devices sampling values (Sn) of an analog signal, storing in second alternate storage cells of said charge coupled devices reference charge levels (SO), comparing each of said sampling values (Sn) with said reference values (SO) and increasing or decreasing said sampling values (Sn) in response to such comparison.

4,283,697

HIGH FREQUENCY FILTER

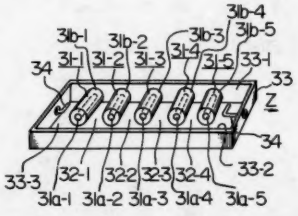
Yoshio Masuda; Atsushi Fukasawa; Jun Ashiwa, and Takuro Sato, all of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed Nov. 9, 1979, Ser. No. 92,670

Claims priority, application Japan, Nov. 20, 1978, 53-142306

Int. Cl.³ H01P *1/20, 7/00*

U.S. Cl. 333—202 **7 Claims**



1. A high frequency filter comprising a closed conductive housing, a pair of input/output means provided at both the extreme ends of said housing, a plurality of resonators mounted in said housing on a straight line between said input/output means, and one end of all of said resonators being fixed on the single conductive plane of said housing and the other end of said resonators being free standing, wherein each resonator

comprises a center conductor and a dielectric body surrounding said center conductor, and wherein the outer surface of the dielectric body is substantially disposed in the air so that a displacement current on the surface of the dielectric body can flow, the separation between each of said resonators is determined according to the desired coupling coefficient for the filter, and the coupling between each resonators is effected by the displacement current relating to surface TM mode and the conductive current relating to TEM mode.

4,283,698

MAGNET DEVICE FOR ANIMALS, IN PARTICULAR CATTLE

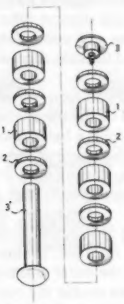
Yoshiho Fujisawa, 18-6, 3-chome Kichijoji Minami-cho, Musashino, Tokyo, Japan

Filed Sep. 17, 1979, Ser. No. 76,325

Claims priority, application Japan, Aug. 8, 1979, 54-109646[U]

Int. Cl.³ H01F *7/02*

U.S. Cl. 335—306 **6 Claims**



1. A magnetic device adapted to be ingested by an animal, the device comprising:

(a) a plurality of cylindrical magnets;

(b) a plurality of cylindrical magnetic spacers disposed between said magnets to form a longitudinal rod having a size which suffices to lodge the device in the stomach of the animal and not pass to the intestines,

(c) said spacers and said magnets having essentially the same diameter and being arranged coaxially and adjacent to each other, said magnets being arranged such that the magnetic poles of the magnets confronting each other through the spacers are of the same polarity; and

(d) two end pieces, one end piece being disposed at each end of the rod, said end pieces being generally semi-circularly shaped and having a diameter essentially the same as the diameter of said cylindrical magnets and spacers.

4,283,699

HOLDER FOR AN ELECTROMAGNETIC COIL

Roland Ehrgott, Munich, and Gerhard Meindl, Alling, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Mar. 6, 1980, Ser. No. 127,871

Int. Cl.³ H01F *15/02, 27/26*

U.S. Cl. 336—67 **10 Claims**

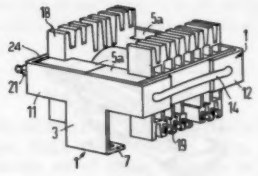
1. In an electromagnetic coil assembly consisting of opposed abutting E core halves each having an end face and two outer legs and a centrally disposed inner leg, and a hollow coil bobbin which receives said central legs and is disposed between said halves, a holder for said assembly comprising:

two brackets disposed adjacent to said outer legs of each core half, each said bracket having a pair of spaced bores;

at least one retainer received in said bores in said brackets, said retainer terminating in two threaded ends;

a means in said E core half legs for receiving and aligning said retainer,

whereby said retainer extends through said brackets and said means in said core half legs to hold said halves between said brackets;



a pair of nuts received on said threaded ends of said retainer for applying uniform retaining pressure to said halves in cooperation with said brackets; and

at least one vertical leg respectively depending downwardly from each bracket, each said vertical leg carrying means thereon for attaching said vertical leg to a circuit.

4,283,700

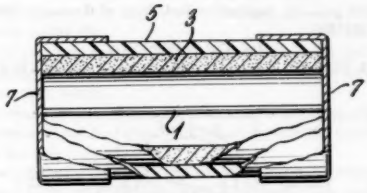
DOUBLE TUBULAR TIME-LAG FUSE HAVING IMPROVED BREAKING CAPACITY

Fumitake Akiyama, Yokohama, Japan, assignor to San-O Industrial Co., Ltd., Tokyo, Japan

Filed Jan. 15, 1979, Ser. No. 3,261

Int. Cl.³ H01H *85/38*

U.S. Cl. 337—166 **2 Claims**



1. A time lag fuse having improved current-interrupting characteristics which comprises an inner tubular member, an outer tubular member encasing said inner tubular member and coterminous therewith, a fusible element disposed between the ends of said inner tubular member and means for enclosing the ends of said tubular members while establishing electrical contact with said fusible element, said inner tubular member being made of a material selected from the group consisting of fosterite, steatite, talc, or mixtures thereof having high thermal conductivity and low thermal impact resistance so as to be fragmented by the passage of an overload electrical current through said fusible element, and said outer tubular member being made of a material selected from the group consisting of cordierite ceramic, lithium ceramic, or mixtures thereof having low thermal conductivity and high thermal impact resistance to resist fragmentation during the passage of said overload electrical current.

4,283,701

OVERSHOOT COMPENSATED THERMOSTAT

William D. Ryckman, Jr., Asheboro, N.C., assignor to General Electric Company, New York, N.Y.

Filed Apr. 20, 1979, Ser. No. 31,979

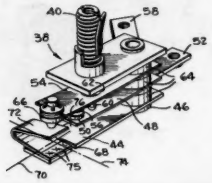
Int. Cl.³ H01H *37/52*

U.S. Cl. 337—341 **9 Claims**

1. In a thermostat assembly having contacts for making and breaking an electrical circuit to control heat to a medium and

using a heat deformable blade composed of first and second oppositely deformable portions supported at one point and operably connected to one of said contacts spaced from the support, the improvement comprising,

an opening in said deformable blade and having said deformable portions primarily disposed on opposite sides of said



opening and mounted with their main axes of deformation substantially at right angles to each other,

said opening disposed between the support and the operative connection,

whereby conduction of heat to the operative connection is delayed by said opening.

4,283,702

CONTACTLESS CONDUCTANCE POTENTIOMETER

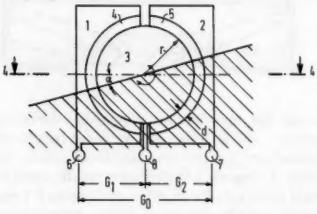
Juergen Meyer, Taunusstein, German Democratic Rep., and Norbert Schaaf, Wiesbaden, Fed. Rep. of Germany, assignors to Heimann GmbH, Wiesbaden, Fed. Rep. of Germany

Filed May 10, 1979, Ser. No. 37,825

Claims priority, application Fed. Rep. of Germany, May 23, 1978, 2822502

Int. Cl.³ H01L *31/08*

U.S. Cl. 338—15 **10 Claims**



1. A contactless conductance potentiometer wherein the total conductance between two electrical terminals can be selectively divided into parts, which parts always equal the said total conductance comprising a light transparent substrate, a circular light transparent tapping electrode formed on said substrate, an external terminal connected to said tapping electrode, a pair of semicircular shaped photoconductor layers formed on substrate about and overlying and contacting said circular tapping electrode and electrically separated from each other, a pair of exterior electrodes formed on said substrate and overlying and respectively contacting said pair of semicircular photoconductor layers and said pair of exterior electrodes electrically separated from each other, such that when said pair of photoconductor layers are exposed to light through said transparent substrate and tapping electrode on approximately half of the total circular area of said semicircular photoconductor layers, the conductance of said two parts being equal to the total conductance between said two terminals, the tapping point being determined by the angular position of light falling on half of said pair of photoconductor layers.

4,283,703

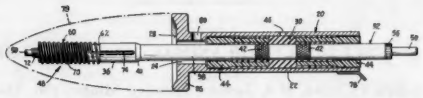
VIBRATION-RESISTANT PROBE-LIKE ELECTRICAL HEATERS

Laurence G. Horwitt, New Haven, Conn., assignor to Sun Chemical Corporation, New York, N.Y.

Filed Aug. 31, 1979, Ser. No. 71,753

Int. Cl.³ H01L *7/00;* **H05B** *3/08;* **G01N** *27/26*

U.S. Cl. 338—34 **3 Claims**



1. A probe-like vibration-resistant electrical heater assembly for use in an oxygen sensor of an exhaust monitoring system for internal combustion engines, comprising in combination:

(a) an elongate metal tube adapted to constitute a support and to carry an electrical current, one end portion of said tube being of enlarged diameter,

(b) an elongate metal conductor member extending through and spaced from said support tube, said conductor member projecting from said one enlarged-diameter end portion of the tube and forming therewith an annular space at said end portion,

(c) a tubular ceramic coil form surrounding and carried on the projecting end of the metal conductor member,

(d) said coil form having a hub disposed and closely fitting into the said annular space at the enlarged-diameter end portion of the tube,

(e) said coil form having a helical groove in its exterior surface, and

(f) a helical heating coil of wire disposed in the helical groove of the coil form and having its ends secured to an exterior surface of the metal tube and to the metal conductor member so as to enable the coil to be energized,

(g) said hub, conductor member and enlarged-diameter end portion of said tube constituting a rigid, unitary direct-engaging assemblage, and said hub having a loose-fit in and being cemented in said enlarged-diameter portion of the tube.

4,283,704

VARIABLE RESISTOR

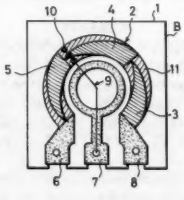
Takeshi Ohtani; Susumu Nishimura; Kozo Magami, and Katsuhisa Osada, all of Miyagi, Japan, assignors to Alps Electric Co., Ltd., Tokyo, Japan

Filed May 14, 1979, Ser. No. 38,947

Claims priority, application Japan, May 18, 1978, 53/66918[U]

Int. Cl.³ H01C *10/22*

U.S. Cl. 338—138 **2 Claims**



1. A variable resistor having an insulating substrate; a resistive member carried on said insulating substrate and having a width varying in the longitudinal direction thereof; a first terminal section formed on said insulating substrate and connected to an output terminal; a second terminal section connected to one end portion of said resistive member; a third

terminal section connected to the other end portion of said resistive member; a slide member connected to said first terminal section and having a plurality of contact elements sliding on said resistive member; and a high resistance film formed on said insulating substrate, said high resistance film underlying said resistive member and having a surface resistance of about 1×10^{7} to 1×10^{9} ohms per square centimeter so as to come into contact with a part of said contact elements at the portion of a narrow width of said resistance member and neutralize the adverse effects of any static electricity generated by the movement of said contact elements.

4,283,705

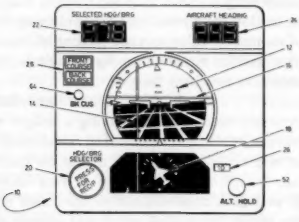
SYSTEM FOR PROVIDING AN INTEGRATED DISPLAY OF INSTANTANEOUS INFORMATION RELATIVE TO AIRCRAFT ATTITUDE, HEADING, ALTITUDE, AND HORIZONTAL SITUATION

Robert James, Lancaster, Calif., and Alan M. Lovelace, Administrator of the National Aeronautics and Space Administration, with respect to an invention of Robert James

Filed May 30, 1979, Ser. No. 43,942

Int. Cl.[3] **G08G** *5/00*

U.S. Cl. 340—27 NA **2 Claims**



1. In a display unit adapted to be mounted in a cockpit of a piloted aircraft for pictorially presenting combined inflight course, altitude, and horizontal situation information relative to a selected course and altitude, the improvement comprising in combination:

A. a horizontal situation indicator for providing heading intelligence including a window having a transparent face disposed in a plane normally related to the longitudinal axis of the cockpit, a pointer mounted for visual observation through the face of said window pictorially depicting an instantaneous heading of the piloted aircraft relative to the selected course comprising a miniature aircraft supported for rotation about an axis normally related to the plane of said window, said window having a top, the center point of the top of the window being located above the axis of the pointer when the aircraft is in a normal level flight attitude, means for driving said miniature aircraft to an oncourse position when the position of the piloted aircraft is on the selected course and the heading thereof is coincident with the bearing of the course, said on-course position being indicated by the miniature aircraft when the nose thereof is pointed toward the center point of the top of said window, and means including a drive motor connected to said pointer and a heading error signal generator connected to the drive motor for angularly displacing the pointer from said on-course position to a heading error position wherein the nose is pointed at an angle relative to a line extended between the axis of the pointer and the center point equal to the instantaneous angle defined between the bearing of the selected course and the instantaneous heading for the piloted aircraft;

B. a course deviation bar extended downwardly from the top of said window and supported for displacement along a path extended horizontally across the face of the window, and means including a beacon signal/converter and a drive motor for displacing said bar along said path in directions and through distances corresponding to instantaneous directions and distances of the piloted aircraft relative to the selected course; and

C. an altitude deviation bar extended horizontally across the window, and means including an altitude error-signal generator and a motor connected to said altitude deviation bar for displacing the altitude deviation bar vertically across the face of said window as the altitude of the aircraft deviates from a selected altitude for the piloted aircraft.

4,283,706

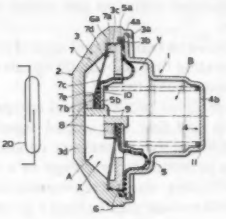
PUNCTURE DETECTING DEVICE

Shigeo Kimura, Shiki; Tadashi Kamiya, Niiza, and Kiyotaka Hayashi, Asaka, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 19, 1979, Ser. No. 31,433

Int. Cl.[3] **B60C** *23/04;* **H01H** *35/34, 36/00*

U.S. Cl. 340—58 **20 Claims**



1. A puncture detecting device comprising:

a body casing (3);

an alarm circuit switch (20) disposed forwardly of said body casing (3), said alarm circuit switch (20) being actuable by magnetic force;

a pressure chamber (A) formed in said body casing (3), said pressure chamber (A) communicating with the interior of a tire (15);

an atmospheric chamber (B) formed in said body casing (3), said atmospheric chamber (B) communicating with the atmosphere;

a flexible diaphragm (5) sealingly separating said pressure chamber (A) from said atmospheric chamber (B);

a snap-acting spring plate member (7) disposed in said pressure chamber (A) and rigidly connected at a central portion (7*b*) of said snap-acting spring plate member (7) to a central portion (5*b*) of said flexible diaphragm (5);

a magnet (8) supported on a front face of said snap-acting spring plate member (7);

said magnet (8) being secured to an outer surface of said central portion (7*b*) of said snap-acting spring plate member (7), and being connected to said central portion (5*b*) of said flexible diaphragm (5) by means of said snap-acting spring plate member (7);

resilient means (11) for resiliently urging said snap-acting spring plate member (7) from the rear side thereof;

said snap-acting spring plate member (7) being normally held in a rearward direction against said resilient means (11) by the air pressure in said pressure chamber (A) to permit said magnet (8) to be spaced from said alarm circuit switch (20); and

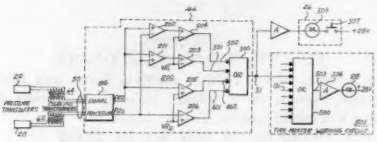
said snap-acting spring plate member (7) being buckled under the force from said resilient means (11) to rapidly project forwardly when said air pressure in said pressure chamber (A) decreases below a predetermined amount, whereby said magnet (8) is moved closer to said alarm circuit switch (20) to actuate said alarm circuit switch (20).

4,283,707

AIRCRAFT LOW PRESSURE TIRE WARNING SYSTEM HAVING COMPARATOR CIRCUIT FOR EACH AXLE PAIR OF A FOUR WHEEL BOGIE CONFIGURATION

Royce F. Church, Lynnwood, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Jul. 12, 1979, Ser. No. 57,137
Int. Cl.³ B60C *23/00*; G08G *1/12*
U.S. Cl. 340—58 **3 Claims**



1. In an aircraft low pressure tire warning system having a flight deck warning display and first and second pressure transducers associated with first and second tires respectively of an axle pair:

means responsive to said first and second pressure transducers for providing first and second signals representative of said first and second tires;

a tire pressure signal processor and comparator circuit responsive to said first and second signals for providing signals representative of pressure conditions of said tires less than a preselected percentage of a preset value and further providing signals representative of wheel pair pressure differentials greater than a given value; and

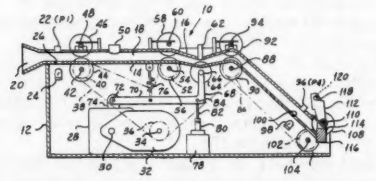
said tire pressure signal processor and comparator circuit including a logic gate having an output terminal for providing a tire pressure warning signal in the event that at least one of said first and second tire pressures is less than a preselected percentage of a preset value or said first and second tire pressure differentials exceed a given value.

4,283,708

PAPER CURRENCY ACCEPTOR

Larry F. Lee, Grand Rapids, Mich., assignor to Rowe International, Inc., Whippany, N.J.

Filed Jun. 13, 1979, Ser. No. 48,044
Int. Cl.³ G06K *9/00*; B07C *5/00*
U.S. Cl. 340—146.3 Z **18 Claims**



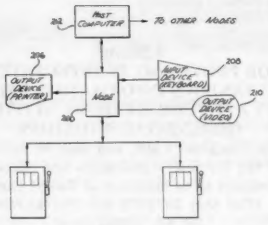
1. Apparatus for validating paper currency normally containing magnetic ink in certain areas and containing nonmagnetic ink in certain other areas, said apparatus including means for magnetically scanning one of said areas normally containing nonmagnetic ink, said scanning means generating an output on traversing a magnetic portion of said bill, and rejection means responsive to a predetermined number of repetitions of said output following the first such output for generating a signal indicating the unacceptability of said bill, said rejection means remaining inoperative prior to said predetermined number of repetitions of said output.

4,283,709

CASH ACCOUNTING AND SURVEILLANCE SYSTEM FOR GAMES

Andres R. Lucero, Reno, Nev.; David E. Williams, San Francisco, Calif., and James L. Nelson, Reno, Nev., assignors to Summit Systems, Inc. (Interscience Systems), Sparks, Nev.

Filed Jan. 29, 1980, Ser. No. 116,669
Int. Cl.³ H04G *9/00*
U.S. Cl. 340—147 R **24 Claims**



1. A cash accounting and surveillance system for gaming machines comprising;

first means within each machine for monitoring the input of items of monetary value and the payout of items of monetary value, and for maintaining digital signals indicative of the cumulative numbers thereof,

second means within each machine for communication over data lines, said second means having a unique address on said communication lines and being responsive thereto to transmit said signals of said first means on said data lines,

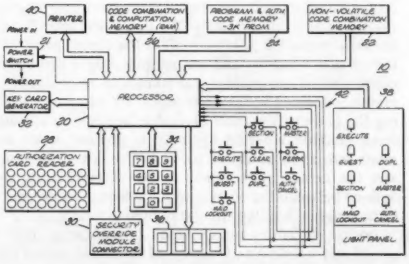
node means coupled to a plurality of said second means through said data communication lines, said node means including means for polling all of said second means coupled thereto and for receiving said digital signals therefrom, said node means having non-volatile storage means for maintaining data responsive to said digital signals in spite of system power loss and node means failures.

4,283,710

SECURITY SYSTEM

Leonard J. Genest, Santa Ana, and Vache B. Madenlian, Huntington Beach, both of Calif., assignors to J.S. Lock Company, Chicago, Ill. and Uniqey, S.A., Fribourg, Switzerland

Continuation-in-part of Ser. No. 954,387, Oct. 25, 1978, abandoned, which is a continuation-in-part of Ser. No. 739,927, Nov. 8, 1976, abandoned. This application Feb. 15, 1979, Ser. No. 12,528
Int. Cl.³ H04Q *3/00*; E05B *49/00*
U.S. Cl. 340—149 R **50 Claims**



1. A security system comprising:

a plurality of electronic locks each for performing, at any

one time, one from a set of lock functions, each lock comprising:

a security memory for storing a security code combination,

at least one alterable memory for storing a lock code combination,

first receiving means for receiving a security code combination and a function code combination representative of one from the set of lock functions, and for receiving a lock code combination,

second receiving means for receiving a lock code combination,

first comparing means for generating a first enable signal when the security code combination received by the first receiving means corresponds to the security code combination stored in the security memory,

enabling means responsive to the occurrence of the first enable signal for enabling the lock to perform a lock function corresponding to the selected function code combination received by the lock, and

second comparing means for comparing the lock code combination received by the second receiving means against the lock code combinations stored in the alterable memories and generating a second enable signal coupled to open the lock when correspondence occurs according to a first selected criterion, and generating a third enable signal coupled to alter the value of the lock code combinations stored in one of the alterable memories when correspondence occurs according to a second selected criterion;

at least one key card for being encoded with a lock code combination and further adapted for being received by the second receiving means for transferring the lock code combination from the key card to the lock;

first, self-powered, portable means for transferring lock code combinations, function code combinations and security code combinations to the lock through the first receiving means of a lock comprising:

first connector means for being selectively interconnected with the first receiving means of the locks,

first function code combination generation means for outputting a selected function code combination through the first connector means, and

first memory means for storing at least one security code combination and selectively storing at least one lock code combination, the security code combination and the lock code combination being transferred into and out from the first memory through the first connector means;

a second, self-powered, portable means for transferring lock code combinations, function code combinations and security code combinations to a lock through the first receiving means, the second portable means comprising:

second connector means for being selectively interconnected with the first receiving means of the electronic locks,

second function code combination generation means for outputting a selected function code combination through the second connector means;

second memory means for storing at least one security code combination, the security code combination being transferred out from the second memory through the second connector means, and

reading means for reading a lock code combination from one of the key cards and transferring the lock code combination so read through the second connector means to the lock; and

central means comprising:

connector means for interconnecting the first portable means to the central means,

means for selectively transferring at least a security code combination to the first portable means through the first connector means of the first portable means, and

means for selectively encoding the key card with a lock code combination.

4,283,711

CROSS-TRACK DISTRIBUTOR FOR VIDEO SIGNALS

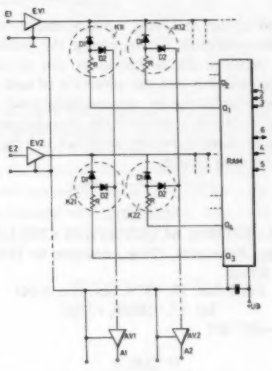
Dieter Frank, Darmstadt-Eberstadt, and Kurt Hennig, Rossdorf, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed May 6, 1980, Ser. No. 147,209

Claims priority, application Fed. Rep. of Germany, May 14, 1979, 2919327

Int. Cl.[3] **H04Q** *3/00*

U.S. Cl. 340—166 R **4 Claims**



1. A cross-track distributor for video signals for transferring signals from any one or more of several input lines to any one or more of several output lines through crosspoint switches, comprising the improvement in that:

each crosspoint switch consists essentially of a pair of oppositely poled diodes connected in series between the input and output lines of the respective crosspoint and a resistor connected between the common connection of said diodes of said pair and a controllably switched source of current;

said controllably switched source of current comprises controllable read-write storage means of the random access memory type having outputs connected to the respective resistors of the crosspoints and having at least addressing and read-write inputs connected to at least one remotely located control and monitoring means.

4,283,712

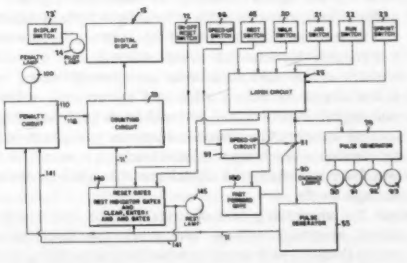
PORTABLE EXERCISE TOTALIZER

Roy W. Goody, 281-4 Rio Verde Pl., Milpitas, Calif. 95131

Filed Dec. 22, 1976, Ser. No. 753,582

Int. Cl.[3] **G08B** *5/36;* **A63B** *71/06*

U.S. Cl. 340—323 R **20 Claims**



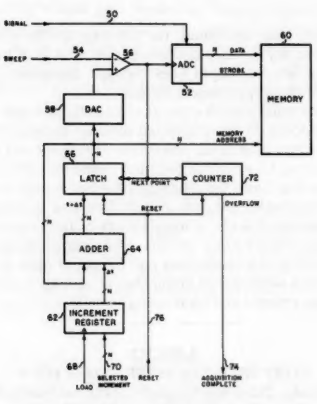
1. An exercise totalizer comprising:

(a) a plurality of activating switches representing various exercise routines of different degrees of exercise exertion;
(b) a pulse generator for producing pulses at different preselected frequencies corresponding to the different degrees of physical exertion represented by the respective activating switches;
(c) a first circuit interconnecting said activating switches and said pulse generator for exciting said pulse generator in response to the actuation of one or more of said activating switches to generate pulses at a preselected frequency corresponding to the physical exertion represented by the actuated one or more of said activating switches;
(d) a deactivating switch connected to said first circuit for interrupting the generation of pulses by said pulse generator; and
(e) a second circuit including a visual display connected to said pulse generator for receiving the pulses generated thereby between the actuation of one or more of said activating switches and the actuation of said deactivating switch for displaying the accumulated total representing the exercise exertion between the exercise period of actuating one or more activating switches and the actuation of the deactivating switch.

4,283,713
WAVEFORM ACQUISITION CIRCUIT

Harald Philipp, Beaverton, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Jan. 15, 1979, Ser. No. 3,141
Int. Cl.[3] H03K *13/02*
U.S. Cl. 340—347 SH **7 Claims**



1. A waveform acquisition circuit having a variable acquisition rate, comprising:

control circuit means including an increment register, an adder circuit, and a latch for providing a digitally selected and incremented digital control signal in accordance with a selectable incremental value, wherein said increment register stores said selectable incremental value, said adder circuit iteratively adds said incremental value to said digital control signal, and said latch holds said digital control signal until updated in response to convert pulses received at a clock input of said latch;

means for converting said digital control signal to discrete voltage levels;

means for comparing said discrete voltage levels with a sweep sawtooth voltage and generating said convert pulses thereby, said sweep sawtooth corresponding to the time-base axis of said analog waveform;

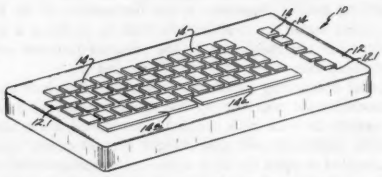
an analog-to-digital converter for converting instantaneous values of said analog waveform to digital waveform data in response to said convert pulses; and

an addressable waveform memory for storing said digital waveform data, wherein said digital control signal provides addresses for said memory.

4,283,714
MAGNETIC KEYBOARD SYSTEM

George Trenkler, East Providence, R.I.; Richard G. Delagi, Sharon, and Francois A. Padovani, Westwood, both of Mass., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 8, 1979, Ser. No. 64,954
Int. Cl.[3] G06F *3/02*
U.S. Cl. 340—365 L **6 Claims**



1. A control apparatus comprising first magnetic means, means for applying an input signal to the first magnetic means, second magnetic means mounted adjacent to the first magnetic means, and modifying means movable between a first position in which the second magnetic means provides an output signal of a first polarity in response to the input of a signal to the first magnetic means and a second position in which the second magnetic means provides an output signal of an opposite polarity in response to the input of a signal to the first magnetic means, characterized in that, the second magnetic means is arranged relative to the first magnetic means so that said output signal of said first polarity is induced with relatively small amplitude in and provided as an output from the second magnetic means in response to the input of a signal to the first magnetic means when the modifying means is in said first position, said modifying means being also adapted to have a signal induced therein in response to the input of a signal in the first magnetic means when the modifying means is in said second position so that the signal in the modifying means tends to induce a corresponding signal in the second magnetic means which is of larger amplitude and of opposite polarity relative to said output signal of said first polarity, whereby the polarity of the output provided by the second magnetic means is reversed to provide said opposite polarity output signal from the second magnetic means when the modifying means is in said second position.

4,283,715
CONTROL OF DISPLAY DEVICES WITH ELECTROMAGNETIC DRUMS

Jöel Choisnet, Levallois-Perret, France, assignor to Jaeger, Levallois-Perret, France

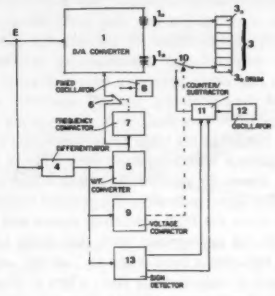
Filed Oct. 12, 1979, Ser. No. 84,442
Claims priority, application France, Oct. 17, 1978, 78 29559
Int. Cl.[3] G08B *5/30*
U.S. Cl. 340—378.1 **6 Claims**

1. A control device for digital display indicators having electromagnetic drums of the type containing an analogue/-digital convertor capable of receiving in analogue form an information to be displayed, the convertor having an output connected to the digital display indicator drums and a second input for controlling the rate of conversion operations at a selected frequency, the improvement comprising:

a differentiating circuit capable of producing as its output the time derivative of the quantity inputted to it; and

circuit means, whose input is connected to the output of said

differentiating circuit, for producing as its output a selected frequency depending on quantity inputted to it, whereby when the quantity inputted to said differentiating circuit is the same as the information inputted to said



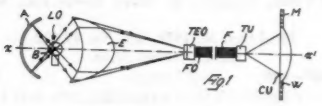
analogue/digital convertor and the output of said circuit means is connected to the second input of said analogue/-digital convertor, the rate of conversion of the analogue/-digital convertor is controlled by the time rate of change of the information to be displayed.

4,283,716

MULTI-COLOR TRAFFIC SIGNAL

Giancarlo Pasquali, Bologna, Italy, assignor to CIR-S.p.A. Divisione Sasib, Bologna, Italy

Filed Mar. 24, 1980, Ser. No. 133,104
Int. Cl.[3] G08B *5/00*
U.S. Cl. 340—380 **5 Claims**



1. Multi-color traffic signal in particular for railway line signalling installations, of the type presenting for each color a light source comprising a lamp, a collecting optical unit and a fixed chromatic filter, the light sources being connected by means of a optical fiber guide with an irradiating window surface constituting the output optics of the signal, characterized by the fact that said collecting optical unit comprises, arranged along a same optical axis and at opposite sides of the respective lamp, a curved focalized mirror and a spherical-elliptical lens, arranged so as to focalize the light flux emanating directly from said lamp and the flux reflected from said mirror on the corresponding input of said optical fiber guide.

4,283,717

MONITORING SYSTEM FOR A DIRECT-WIRE ALARM SYSTEM

Carl W. Caldwell, Columbia, and Rick A. Britton, Springfield, both of Mo., assignors to Digital Monitoring Products, Springfield, Mo.

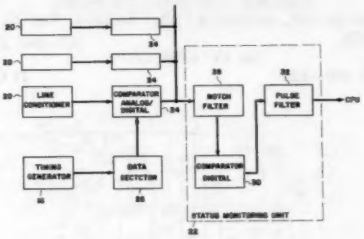
Filed Oct. 1, 1979, Ser. No. 80,291
Int. Cl.[3] G08B *29/00*; G08C *9/00*
U.S. Cl. 340—506 **14 Claims**

1. A direct-wire alarm monitoring system for high-speed sequential monitoring of a plurality of DC current loops comprising:

(a) an analog-to-digital converter means for each loop to convert the current level to a digital value;

(b) a digital notch filter operably connected to the analog-to-digital converter to eliminate periodic noise of a pre-determined period from each loop sequentially;

(c) a digital comparator operably connected to the output of the notch filter to detect changes in current level;



(d) a digital pulse filter operably connected to the output of the digital comparator to eliminate pulse noise if a change in current level is detected by the digital comparator; and

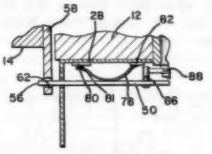
(e) means for sequentially sampling the output of the analog-to-digital converter means for each loop and applying that sample sequentially to the digital notch filter.

4,283,718

DOOR ALARM DEVICE

Edward A. Butler, North Kingstown, and Francis R. Savoie, Pawtucket, both of R.I., assignors to Synco National Ltd., Providence, R.I.

Filed Jul. 2, 1979, Ser. No. 54,165
Int. Cl.[3] G08B *13/06*
U.S. Cl. 340—545 **5 Claims**

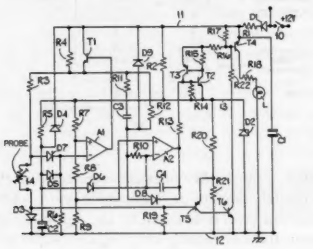


1. A device for signalling door movement as by attempted entry comprising, a door frame, a door mounted in said frame for movement between respective open and closed positions relative to said frame, a housing having an inner wall affixed to said door including an elongated bolt mounted thereon for transverse movement with respect thereto and to said door between a first non-activatable position wherein said door may be freely opened and a second activatable position, one end of said bolt adapted to contact said door frame in said activatable position so as to fixedly position such with respect to said door frame and so as to enable said door and said housing to move at least slightly relative to and towards said bolt, electrical signal means, a pair of electrical signal contacts on said housing and in opposition to said bolt, a leaf spring having one end connected to one of said contacts and the other end normally disposed in spaced relation with said other contact, said leaf spring contacting said bolt so as to spring bias said bolt away from the inner wall of said housing whereby moving said door towards its open position causes said spring other end and said other contact to engage and said signal to be activated.

4,283,719
LIQUID LEVEL SENSING CIRCUIT

David G. Williams, Birmingham, and Paul A. Harris, Walsall, both of England, assignors to Lucas Industries Limited, Birmingham, England

Filed Aug. 7, 1979, Ser. No. 64,642
Claims priority, application United Kingdom, Aug. 23, 1978, 34265/78
Int. Cl.[3] G08B 21/00
U.S. Cl. 340—620 21 Claims

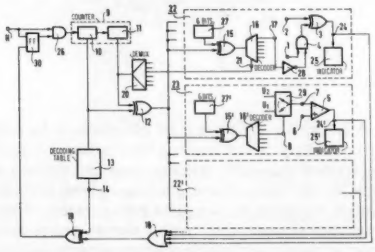


1. A liquid level sensing apparatus comprising a resistive probe having a high positive temperature co-efficient of resistivity, a circuit for applying a controlled electrical signal to said probe for a predetermined test period, and means sensitive to a voltage signal developed as a result of said electrical signal applied to said probe, said voltage sensitive means including a differentiating circuit having a time constant so that the voltage sensitive means detects the rate of change of said voltage signal.

4,283,720
APPARATUS FOR MONITORING THE OPERATION OF ELECTRONIC EQUIPMENT

Jean R. Herledan, Lannion, France, assignor to Compagnie Industrielle des Telecommunications Cit-Alcatel, Paris, France

Filed Jun. 24, 1980, Ser. No. 162,472
Claims priority, application France, Jul. 11, 1979, 79 18030
Int. Cl.[3] G08B 21/00, 29/00
U.S. Cl. 340—653 4 Claims



1. Monitoring apparatus for monitoring the operation of electronic equipment having a plurality of n circuits to be monitored, each circuit to be monitored being associated with a corresponding fault detection circuit with a corresponding fault indicating output terminal, the monitoring apparatus comprising:

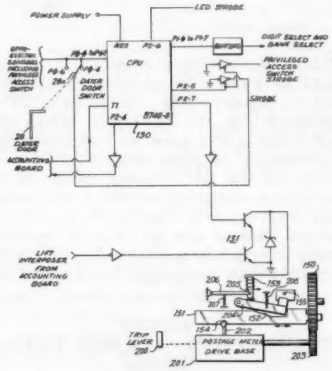
fault indicating means connected to the fault indicating output terminals and arranged to indicate a fault, whether genuine or simulated, whenever a fault condition is present at any of the fault indicating output terminals; and

fault-simulation means comprising a modulo-N address counter, where N>n, address decoding means associated with said fault indicating output terminals for controlling the condition of the fault indicating output terminals in such a manner that a simulated fault condition is applied to each fault indicating output terminal whenever the address counter indicates an address corresponding to said associated output terminal; the fault-simulation means further comprising a decoding table connected to receive the addresses provided by the counter and to provide a binary output signal distinguishing between "real" addresses that correspond to a fault indicating output terminal and the remaining "unreal" addresses which do not correspond to any fault indicating output terminal, the binary output of the table being connected to one input of a comparator which receives the output of the fault indicating means on another input and which is arranged to provide a signal indicative of a genuine fault whenever the signals from the fault indicating means and the decoding table do not correspond, such that if the fault gathering means indicates a fault when an "unreal" address is present, or if it indicates no fault when a "real" address is present, then a genuine fault is detected, said fault being in the circuits to be monitored or in the monitoring apparatus itself.

4,283,721
ELECTRONIC POSTAGE METER HAVING CHECK DATE WARNING

Alton B. Eckert, Norwalk, and Edward C. Duwel, Trumbull, both of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Oct. 30, 1979, Ser. No. 89,422
Int. Cl.[3] G08B 21/00
U.S. Cl. 340—680 6 Claims

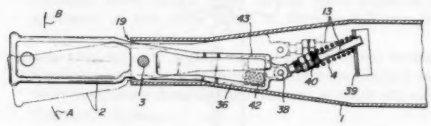


1. In an electronic postal meter having a postage printing device, computer means and including date setting means and an access door enabling external access to date setting means; the improvement comprising switch means connecting to said door for signaling the position thereof to said computer means, a warning indicator coupled to said computer means for indicating that said door is opened, said computer means having an operation power input and means responsive to application of power to said meter for inhibiting operation of said meter until said access door has been opened and closed at least once.

4,283,722
OVERLOAD INDICATION DEVICE FOR A LEVER HOIST

Miyoshi Kito, Tokyo, and Kazuo Igarashi, Kawasaki, both of Japan, assignors to Kabushiki Kaisha Kito, Kawasaki, Japan

Filed Nov. 9, 1978, Ser. No. 959,273
Claims priority, application Japan, Nov. 11, 1977, 52-134702; Nov. 12, 1977, 52-135974
Int. Cl.[3] B66C *3/00*; G08B *21/00*
U.S. Cl. 340—685 7 Claims

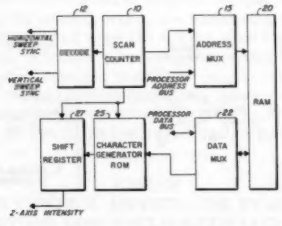


1. An overload indication device for use in a lever hoist, comprising: a handle having one end pivotably mounted to an operating main lever of a lever hoist at one end thereof, said handle being normally held in alignment with said main lever, and being movable to a position at an angle with respect to said main lever when under an overloaded condition, holding spring means connected between said handle and said main lever, said holding spring means being pivotable between a first position for holding said handle in alignment with said main lever and a second position for maintaining said handle in said angular position, and overload indication means for indicating said overload condition in response to the pivotal movement of said handle.

4,283,723
APPARATUS AND METHOD FOR PROVIDING DIGITAL AND/OR BAR GRAPH DISPLAYS OF MEASURED QUANTITIES

Robert H. Bickley, Scottsdale, and Thad J. Genrich, Tempe, both of Ariz., assignors to Motorola Inc., Schaumburg, Ill.

Filed May 29, 1979, Ser. No. 42,735
Int. Cl.[3] G06F *3/14*
U.S. Cl. 340—722 10 Claims

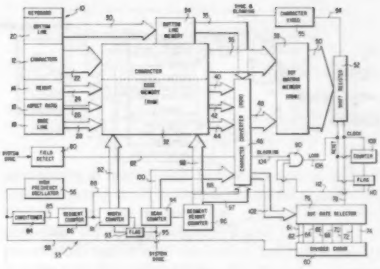


1. Display apparatus for producing a variable bar graph presentation on a cathode ray tube type of display, including generating means for selectively providing a plurality of characters each composed of a plurality of dots prepositioned in rows and columns to form a line segment different in length than each of the other characters, and means for combining said characters in differing quantities and types to form bar graph presentations of substantially any desired length.

4,283,724
VARIABLE SIZE DOT MATRIX CHARACTER GENERATOR IN WHICH A HEIGHT SIGNAL AND AN ASPECT RATIO SIGNAL ACTUATE THE SAME

Philip K. Edwards, Washington Grove, Md., assignor to Computer Operations, Lanham, Md.

Filed Feb. 28, 1979, Ser. No. 16,299
Int. Cl.[3] G06F *3/14*
U.S. Cl. 340—731 30 Claims



1. A variable size character generator for use in a system that displays characters as matrices of dots, said system including a record medium, a modulated beam which impinges on said record medium, and means for generating a scanning raster so that said modulated beam is repetitively swept across said record medium at a substantially uniform rate, said means for generating comprising:

means for generating control signals for each character selected to be displayed, said control signals including a character address signal defining said selected character as a dot matrix having a fixed number of columns and lines, a height signal defining a selected height for said selected character, and an aspect ratio signal defining a selected aspect ratio for said selected character; and

means for modulating said beam in accordance with said control signals for causing said selected character having said selected height and said selected aspect ratio to be displayed on said record medium, said means for modulating causing said selected character to be displayed as a dot matrix having a number of lines selected from said fixed number of lines to correspond to said selected height and said fixed number of columns spaced in accordance with an output rate established as a function of a width defined by said height signal and said aspect ratio signal.

4,283,725
IN-FLIGHT AIRCRAFT WEATHER RADAR CALIBRATION

John P. Chisholm, P.O. Box 2122, Olympic Valley, Calif. 95730

Filed Oct. 9, 1979, Ser. No. 82,512
Int. Cl.[3] G01S *13/95*, *7/40*
U.S. Cl. 343—5 W 13 Claims

1. An in-flight calibration system for calibrating an aircraft weather radar while the aircraft is approaching touchdown on a runway along a fixed glideslope path, the system including the combination of:

(a) approach guidance means cooperatively located in the aircraft and on the ground for guiding the approach of the aircraft toward touchdown along said fixed glideslope path;

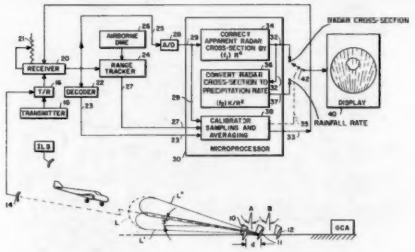
(b) encoded radar reflector means mounted on the ground substantially at touchdown and directed upwardly along said glideslope path, the reflector means having a fixed and predetermined equivalent radar cross-section as viewed along said path and having a reflective pattern aimed upwardly along the path and with a cutoff approaching but above the plane of the runway;

(c) the aircraft weather radar having an antenna and a trans-

mitter and a receiver and means to adjust the radar sensitivity;

(d) a decoder coupled to said receiver and operative to deliver signals responsive to decoded reflections from said coded reflector means;

(e) range measuring means for determining the range from the aircraft to the encoded reflector means, and operative to deliver an enabling signal when the range reaches a predetermined value; and



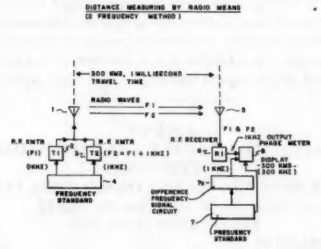
(f) calibrator means enabled by signals from said decoder and said range measuring means and operative to compare the intensity level of the output from the receiver representing reflections from the coded reflector means with a reference level, whereby to correct the sensitivity of the receiver to make the output level equal the reference level.

4,283,726

DUAL FREQUENCY DISTANCE MEASURING SYSTEM

Lewis C. Spence, P.O. 10116, Riviera Beach, Fla. 33404, and Stephen Martin, Miami, Fla., assignors to Lewis C. Spence, Riviera Beach, Fla.

Filed Sep. 5, 1978, Ser. No. 939,810
Int. Cl.³ G01S *5/06*
U.S. Cl. 343—112 D **44 Claims**



1. A transmitting station in a radio frequency distance measuring system utilized to determine the distance of a unknown point from a known point, which comprises:

(a) stable frequency source means for providing a first signal of a given frequency and a given phase;

(b) means responsive to said first signal for generating a first continuous wave carrier signal of a first frequency;

(c) means responsive to said first signal for generating a second continuous wave carrier signal of a second frequency, said second frequency displaced from said first frequency by a selected difference frequency; and

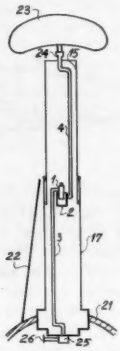
(d) means for radiating said first and second continuous wave carrier signals for reception at said unknown point for providing a difference frequency signal for determining said distance.

4,283,727

SEPARABLE MICROWAVE COUPLING AND ANTENNA USING SAME

Jacques Martel, and Roger Famin, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Jan. 19, 1979, Ser. No. 4,985
Claims priority, application France, Jan. 27, 1978, 78 02337
Int. Cl.³ H01Q *1/34*
U.S. Cl. 343—710 **9 Claims**



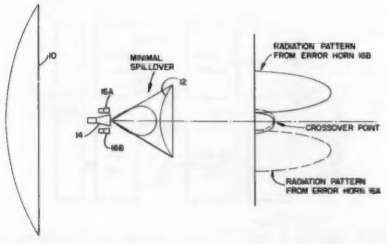
1. In combination, relatively movable first and second main waveguides respectively connected to a source of microwaves and to a load, and a separable coupling between said main waveguides establishing a continuous transmission path for said microwaves in a first relative position thereof and interrupting said transmission path in a second relative position thereof, said coupling comprising a male and a female ancillary guide portion each rigidly connected with a respective main waveguide, at least the ancillary guide portion connected to said first main waveguide being provided with a dummy load, said guide portions being coaxially disposed and being interfitted in said first relative position but being axially separated in said second relative position.

4,283,728

FIVE-HORN CASSEGRAIN ANTENNA

Homer E. Bartlett, Cocoa, Fla., assignor to Harris Corporation, Cleveland, Ohio

Filed Mar. 10, 1978, Ser. No. 885,191
Int. Cl.² H01Q *19/18*
U.S. Cl. 343—781 CA **7 Claims**



1. An antenna for generating sum and difference patterns for use in tracking applications comprising:

a concave main dish having a boresight axis;

a subreflector having a tapered configuration positioned on said boresight axis;

a sum horn having a large radiating aperture for generating a sum radiation pattern with good directivity, said sum horn being positioned on said boresight axis between said

main dish and said subreflector such that said directive sum radiation pattern is intercepted by said subreflector and reflected therefrom to illuminate said main dish to thereby generate a radiation output wave;

a plurality of error horns, said error horns being appropriately positioned around said sum horn such that the radiation pattern of each error horn and a second error horn with which it is paired crossover in the sidelobes of their respective patterns and such that said error horns receive radiation reflected from said subreflector with the highest radiation levels being found on the outer edges of the apertures of said error horns to thereby enhance their respective sidelobes; and

means responsive to signals representative of the radiation patterns received at said sum and error horns for appropriately combining these signals to obtain azimuth and elevation error signals.

4,283,729

MULTIPLE BEAM ANTENNA FEED

Phillip N. Richardson, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 26, 1979, Ser. No. 106,774
Int. Cl.³ H01Q *3/26*
U.S. Cl. 343—854 **14 Claims**

1. An array antenna comprising:

(a) an RF energy feed network having a plurality of input mechanisms for receiving RF power for a plurality of independent beams, a plurality of hybrid junctions selectively connected to the plurality of input mechanisms and a plurality of output mechanisms connected selectively to the plurality of hybrids, said plurality of hybrids selectively interconnected and having coupling ratios for maintaining independent modes of propagation and selectively dividing the power to provide RF energy at selected amplitudes to the output mechanisms,

(b) a plurality of radiating elements divided into first and second halves connected to the plurality of hybrid output mechanisms for array excitation, and

(c) said plurality of hybrids is divided into first, second and third portions, said first and second portions of hybrids operatively connected to the first and second halves of said radiating elements to form two independent, isolated, orthogonal antenna beams, one beam being an optimized low sidelobe sum beam (Σ) and the other beam being the algebraic difference between an independently, optimized difference beam and sum beam ($\Delta-\Sigma$), and said third portion of said hybrids operatively connected to the first and second portions of said hybrids to form an input power divider to the first and second portions of hybrids.

4,283,730

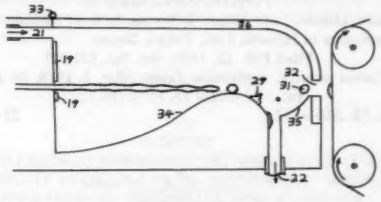
DROPLET CONTROL ASPECTS—INK EVAPORATION REDUCTION; LOW VOLTAGE CONTACT ANGLE CONTROL DEVICE; DROPLET TRAJECTORY RELEASE MODES; USES FOR METALLIC INK DROPS IN CIRCUIT WIRING AND PRESS PRINTING

Ronald E. Graf, Rte. 3, Box 520, Crozet, Va. 22932

Filed Dec. 6, 1979, Ser. No. 100,953
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—75 **7 Claims**

1. A device wherein an information-containing liquid, such as ink, issues in liquid filament form from at least one orifice, and wherein part of the issuing information-containing liquid is selected to proceed to an output means, while part of said issuing liquid is controllably collected and eventually made available for reuse, said device comprising

means to produce a region containing a gaseous medium, which said region becomes almost entirely filled with ink solvent laden gas after a device start-up period, said region



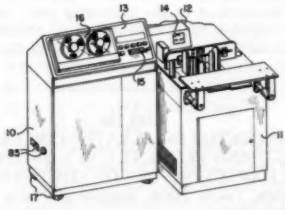
enveloping at least almost all that portion of said information containing liquid which is controllably collected after issuing from said at least one orifice, said enveloping occuring during the entire interval after said portion passes from said at least one orifice and before said portion is collected, thus substantially preventing net evaporation from the said portion while in said region.

4,283,731

INK JET PRINTING APPARATUS

Dennis E. Bok; Patrick E. Bridge, both of Dayton; Robert W. Coulter, Xenia; George W. Denlinger, Springboro; Clifford S. Fernalld, Jr., Xenia; Charlie H. Hill, Jr., Dayton; David A. Huliba, Kettering; James R. Meckstroth, and Robert J. Scranton, both of Centerville, all of Ohio, assignors to The Mead Corporation, Dayton, Ohio

Filed Apr. 22, 1980, Ser. No. 142,787
Int. Cl.³ G01D *15/18, 9/00*
U.S. Cl. 346—75 **22 Claims**



1. Ink jet printing apparatus for printing documents being transported along an independently operated conveyor comprising:

a control console;

a printing arm movably mounted on said control console for movement between a storage position which is clear of said conveyor and a printing position above said conveyor;

tachometer means supported by said printing arm for sensing the speed of movement of said documents and generating a corresponding tachometer signal;

printing control means mounted within said control console for receiving said tachometer signals and generating printing control signals in synchronism therewith;

a print head carriage movably supported by said printing arm;

print head positioning means for adjusting the vertical position of said carriage relative to said printing arm; and

an ink jet printing head mounted on said carriage; said ink jet printing head comprising means for generating a plurality of printing jets arranged in at least one line extending in a sideward direction generally transverse to the direction of

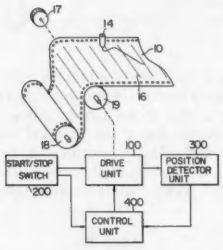
document travel along said conveyor, and means for controlling the printing operation of said printing jets in response to said printing control signals.

4,283,732

RECORDING SYSTEM WITH INTER-LINE SPACE POSITIONING MEANS

Nobuo Akitomo, and Shigeo Tohyama, both of Katsuta, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 13, 1980, Ser. No. 121,091
Claims priority, application Japan, Mar. 2, 1979, 54/24957
Int. Cl.³ G01D *15/16, 9/00, 15/24*
U.S. Cl. 346—112 **22 Claims**



1. A recording system in which recording means is driven in response to input signal while relative position between said recording means and a recording sheet is varied to thereby record said input signal, comprising:

means for monitoring mutual positional relationship between said recording means and rules on said recording sheet which varies as the relative position between said recording sheet and said recording means is varied; and

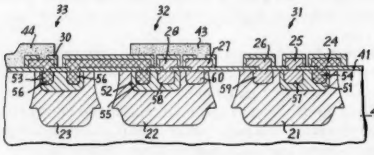
means for varying the relative position between said recording means and said recording sheet on the basis of positional information contained in said monitoring means upon termination of the recording until said recording means has been brought in positional coincidence with a rule on said recording sheet located in the direction in which said relative position is varied.

4,283,733

SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE INCLUDING ELEMENT FOR MONITORING CHARACTERISTICS OF THE DEVICE

Kunio Aomura, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Division of Ser. No. 943,913, Sep. 20, 1978, which is a continuation of Ser. No. 746,744, Dec. 2, 1976, abandoned. This application Sep. 7, 1979, Ser. No. 73,250
Claims priority, application Japan, Dec. 5, 1975, 50/145473
Int. Cl.³ H01L *23/48, 29/44, 29/52*
U.S. Cl. 357—68 **11 Claims**



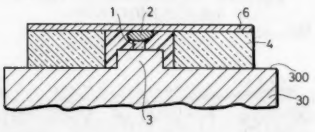
1. A semiconductor device comprising a semiconductor substrate, a plurality of circuit elements in said substrate, each of said circuit elements including a first semiconductor region of said substrate, at least one monitoring circuit element formed in said substrate and including a second semiconductor region of said substrate having substantially the same structure and size as said first semiconductor region of said circuit element to be monitored, an insulating film covering at least a portion of the major surface of said substrate, a characteristic-monitoring electrode of a silicon layer connected to said second semiconductor region of said monitoring circuit element and extending on said insulating film, said characteristic monitoring electrode having a portion on said silicon layer on said insulating film remote from said monitoring circuit element and adapted to receive a probe of a characteristics-measuring apparatus, and a metallic layer electrically connected to said first semiconductor region of said circuit element to be monitored.

4,283,734

PROCESS FOR THE MANUFACTURE OF MILLIMETER WAVE SOURCES OF THE MODULE TYPE

Jacques Espaignol, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Mar. 15, 1979, Ser. No. 20,737
Claims priority, application France, Mar. 17, 1978, 78 07800
Int. Cl.³ H01L *23/02*
U.S. Cl. 357—81 **8 Claims**



1. A process for the manufacture of sources of millimeter waves, comprising at least the following stages:

A. production of a semiconductor plate comprising a substrate and active layers constituting with the substrate a semiconductive structure;

B. addition of a support with low thermal resistance constituted by a first metal, resistant to certain chemical agents, on the side of the active layers of the plate;

C. grinding the substrate, followed by depositing a thin layer of the first metal and a thick layer of a second metal that can be selectively attacked by a chemical agent in the presence of the first metal;

D. formation by photolithography of a large number of studs of the first metal penetrating the second metal up to the first layer of the first metal;

E. selectively attacking the second metal, baring the studs, followed by etching the thin layer in the portions not protected by the studs;

F. selectively attacking the semiconductor material, allowing a block of this material to remain underneath each stud, with the volume of a stud substantially exceeding the volume of the block;

G. finishing of the sources, comprising the cutting out of individual elements.

8. A millimeter wave source, manufactured by a process according to claim **1**, the metallized area deposited on the studs constituting a polarising electrode and the support with low thermal resistance constituting the earth.

4,283,735

METHOD AND APPARATUS FOR SELECTIVELY DELETING DURING VIDEO TAPE RECORDING

David Jagger, 80 Rock Ridge Rd., Fairfield, Conn. 06430

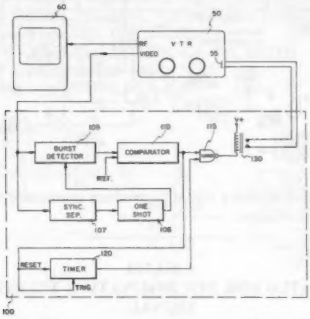
Filed Sep. 21, 1979, Ser. No. 77,663
Int. Cl.³ H04N *5/785*
U.S. Cl. 358—4 **3 Claims**

1. For use in conjunction with a video tape recorder having a pause mode of operation, apparatus for automatically deleting from the television signals being recorded by said recorder, the color portions of received television signals while allowing

recording of monochrome portions of received television signals, comprising:

means for detecting the presence of color burst in the received television signals;

means responsive to the detection of color burst for generating a deleting signal;



timing means, responsive to the color burst detecting means, for generating an indication of the continuous presence of color video for more than a predetermined time;

means responsive to said indication for preventing generation of said deleting signal; and

means responsive to said deleting signal for activating the pause mode of said video tape recorder.

4,283,736

VIDEO SIGNAL REPRODUCING APPARATUS FOR CONVERTING A VIDEO SIGNAL FROM A FIRST FORMAT TO A SECOND FORMAT

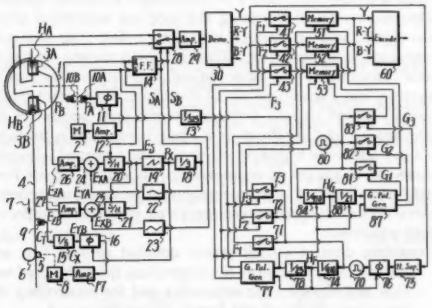
Minoru Morio, Tokyo; Tadahiko Nakamura, Kanagawa; Masahiro Kambara, and Yukio Kubota, both of Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 13,672, Feb. 21, 1979, abandoned. This application Jun. 16, 1980, Ser. No. 159,611

Claims priority, application Japan, Feb. 21, 1978, 53-18695

Int. Cl.[3] **H04N** *9/491, 5/02;* **G11B** *5/43, 21/08*

U.S. Cl. 358—4 **13 Claims**



1. Video signals reproducing apparatus for converting a first video signal recorded with a first field frequency in successive tracks on a single recording medium to a second video signal having a second field frequency different from said first field frequency, said apparatus comprising:

track scanning means for reproducing said first video signal from said signal recording medium, said scanning means being movable in a direction perpendicular to the longitudinal direction along said tracks and reproducing only from said single recording medium sufficient ones of said tracks to form said second video signal;

means for controlling the speed of said scanning means relative to said recording medium as a function of said second field frequency; and

shifting means for shifting the position of said scanning means in said perpendicular direction in accordance with the difference between said first and second field frequencies.

4,283,737

VIDEO SIGNAL REPRODUCING APPARATUS WITH CIRCUIT AVOIDING SKEW DISTORTION WHEN OPERATED AT ABNORMAL SPEED AND/OR DIRECTION

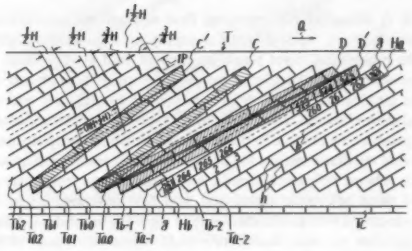
Akira Nikami, Yokohama, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Sep. 25, 1979, Ser. No. 78,774

Claims priority, application Japan, Sep. 26, 1978, 53-118245

Int. Cl.[3] **H04N** *5/795*

U.S. Cl. 358—8 **15 Claims**



1. An apparatus for reproducing video signals recorded in successive parallel tracks extending at an angle to the length of a record tape with horizontal synchronizing pulses of the video signals recorded in nearby tracks being offset from each other in the direction along said tracks, comprising:

at least one reproducing head;

means for moving each said head repeatedly across the tape in a scanning path which is substantially parallel to said direction along the tracks so long as the tape is transported lengthwise at a standard reproducing speed in a predetermined direction, each said head reproducing from one of said tracks adjacent to said scanning path during each traversal of the latter by the head with the tape being transported at said standard speed in said predetermined direction, said scanning path being at an angle to said direction along the tracks when the tape is transported in opposition to said predetermined direction or at a reproducing speed other than said standard speed so as to cause said head to move along, and reproduce said video signals from first one and then another of said nearby tracks in succession during each traversal of said scanning path;

delay means for delaying the reproduced video signals by an amount corresponding to said offset of the horizontal synchronizing pulses recorded in said nearby tracks;

switching means having first and second states alternately providing, as an output therefrom, the video signals reproduced by said head and the delayed video from said delay means; and

control means operative to change-over said switching means upon movement of said head from one to another of said tracks in the course of a traversal of said scanning path.

4,283,738
NTSC TO PAL TRANSCODER

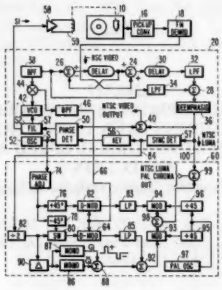
Ernst A. O. Rutishauser, Mutschellen, Switzerland, assignor to RCA Corporation, New York, N.Y.

Filed Dec. 10, 1979, Ser. No. 101,847

Claims priority, application United Kingdom, Jun. 4, 1979, 19386/79

Int. Cl.³ H04N *9/42*

U.S. Cl. 358—11 **10 Claims**



1. A transcoder comprising first and second synchronous demodulators, input means for supplying a quadrature amplitude modulated input signal to each of said synchronous demodulators, first oscillator means for supplying first and second quadrature related reference signals to said first and second demodulators, respectively, for causing said demodulators to produce respective first and second baseband output signals, second oscillator means for producing third and fourth quadrature related reference signals, a first modulator responsive to said third reference signal and said first baseband signal for producing a first modulated output signal, a second modulator responsive to said fourth reference signal and said second baseband signal for producing a second modulated output signal and output means for combining said modulated output signals to provide a composite output signal, characterized by:

pulse generator means for producing periodic spaced apart pulses;

combiner means for combining said periodic spaced apart pulses with said second baseband signal for causing said second modulated output signal produced by said second modulator to include a modulated periodic pulse component; and

means for periodically reversing the phase of a selected one of said second and fourth reference signals.

4,283,739
COLOR TELEVISION RECEIVERS

Anthony Martinez, Bedford, England, assignor to Texas Instruments Incorporated, Dallas, Tex.

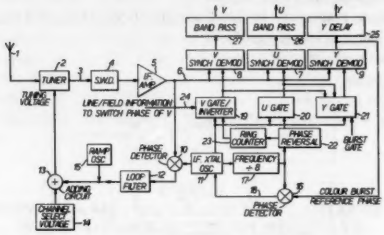
Filed Aug. 30, 1979, Ser. No. 70,755

Claims priority, application United Kingdom, Sep. 11, 1978, 36341/78

Int. Cl.³ H04N *9/50*

U.S. Cl. 358—24 **18 Claims**

1. A receiver for colour television signals of the kind in which colour information is carried as phase dependent modulation of a sub-carrier, the receiver including means for converting a received video signal to an intermediate frequency which is a phase locked integral multiple of the sub-carrier frequency; and means for synchronously demodulating the



intermediate frequency signal to produce luminance and chrominance information.

4,283,740
APPARATUS FOR DISCRIMINATING TELEVISION SIGNAL

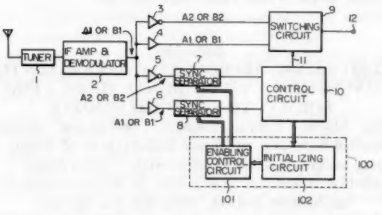
Masataka Okada, Kounosu, Japan, assignor to Clarion Co., Ltd., Tokyo, Japan

Filed Nov. 8, 1979, Ser. No. 92,401

Claims priority, application Japan, Nov. 18, 1978, 53-142687

Int. Cl.³ H04N *7/16*

U.S. Cl. 358—124 **2 Claims**



1. In an apparatus for discriminating a television signal for use in a pay television system in which a scrambled television signal is transmitted from a broadcasting station and specified subscribers view by restoring the received scrambled television signal, said apparatus comprising a first sync separator connected to an output of a demodulator, a second sync separator connected to said output of said demodulator through an invertor, and a television signal discriminating control circuit means coupled to said first and second sync separators for determining whether the received television signal is from one of a pay television broadcasting station and a normal television broadcasting station in accordance with output signals from said first and second sync separators and for supplying restored television signals to a television receiver, wherein the improvement comprises:

enabling control circuit means coupled to said first and second sync separators for controlling the outputs of said first and second sync separators and for controlling the input impedance of said first sync separator; and

initializing circuit means coupled between said signal discriminating control circuit means and said enabling control circuit means for controlling said enabling control circuit means;

wherein said enabling control circuit means initially supplies an output from said first sync separator to said signal discriminating control circuit means; and

wherein, if said signal discriminating control circuit means is not satisfied with said output from said first sync separator, said enabling control circuit means supplies an output

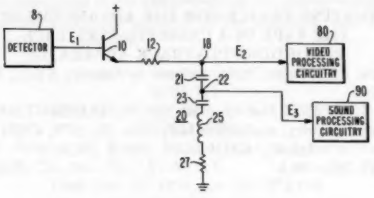
from said second sync separator to said signal discriminating circuit means, and said enabling control circuit means changes the input impedance of said first sync separator so as to place said first sync separator in a half-enabling state.

4,283,741

SIGNAL SEPARATION NETWORKS

Walter G. Gibson, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Oct. 26, 1979, Ser. No. 85,311
Int. Cl.³ H04N *5/62, 5/60*
U.S. Cl. 358—197 **9 Claims**



1. In a television receiver having a common detector for detecting the composite video and intercarrier sound signal components of a television signal, said video signal components occupying a first range of frequencies and said intercarrier sound signal components occupying a second range of frequencies exclusive of said first range, video signal processing circuitry having an input, sound signal processing circuitry having an input, and a signal path for coupling said detected composite video and intercarrier sound signal components to the input of said video signal processing circuitry; a signal separation network comprising:

first, second, and third reactive elements coupled in series between a point on said signal path and a point of reference potential, said network having a terminal intermediate said signal path and reference potential connections which is coupled to the input of said sound processing circuitry,

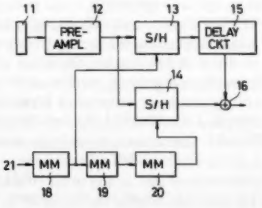
wherein said separation network is tuned so as to exhibit, at said signal path point, a trap response within said second range of frequencies; and at said intermediate terminal, a peak response, within said second range of frequencies and a trap response within said first range of frequencies.

4,283,742

SOLID-STATE IMAGING APPARATUS WITH FIXED PATTERN NOISE REDUCTION

Morishi Izumita, Inagi; Masuo Umemoto, Hinode; Kazuhiro Sato, Tokyo; Toshiyuki Akiyama, Kokubunji; Kenji Takahashi, Kodaira, and Shusaku Nagahara, Hachiouji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 19, 1979, Ser. No. 76,814
Claims priority, application Japan, Sep. 25, 1978, 53-116501
Int. Cl.³ H04N *3/14, 5/30*
U.S. Cl. 358—213 **12 Claims**



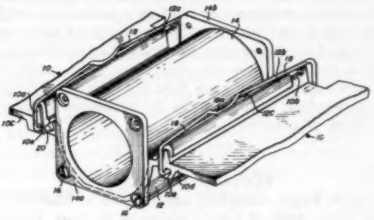
1. In a solid-state imaging apparatus having photoelectric elements which form picture elements and switch means for individually reading out signals derived from said photoelectric elements, the solid-state imaging apparatus further comprising first and second sample-holding means for obtaining samples of a signal having noise therein derived from said switch means and holding said samples, pulse generator means for applying sampling pulses to said first and second sample-holding means at predetermined times different from each other, and calculating means for subjecting outputs from said first and second sample-holding means to predetermined calculations for reducing the noise in the signal derived from said switch means and for providing a reduced noise output signal.

4,283,743

YOKE MOUNTING ASSEMBLY FOR A VIDEO CAMERA

Theodore Kaiser, Bensenville, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 14, 1980, Ser. No. 140,330
Int. Cl.³ H04N *5/645*
U.S. Cl. 358—248 **5 Claims**



1. An adjustable mounting arrangement for the yoke coil assembly of a cathode ray tube device and comprising:

housing means including rail means;

supporting means slideably supported on the rail means for accurately positioning the yoke coil assembly relative to the CRT and including a first drive means;

second drive means rotatably attached to the housing means for cooperating with the first drive means to slidingly move the supporting means relative to the housing means; and

a pair of C-shaped retainer springs releasably attached to the housing means and adapted, in a first position, to bias the supporting means against the housing means and, in a second position, to release the supporting means.

4,283,744

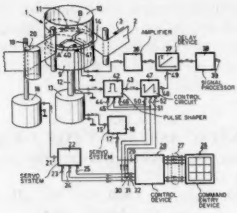
VIDEO REPRODUCING APPARATUS WITH VARIABLE DELAY MEANS

Harald E. Melwisch, and Dietfried Susz, both of Vienna, Austria, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 24, 1979, Ser. No. 77,957
Claims priority, application Austria, Oct. 3, 1978, 7119/78
Int. Cl.³ H04N *5/78*
U.S. Cl. 360—10 **3 Claims**

1. An apparatus for reproducing television signals recorded on a magnetic tape by moving the tape at a predetermined speed past a rotatable transducer having a pair of magnetic heads with mutually different azimuth angles in a manner such that the television signal is recorded in parallel oblique tracks each containing one field of the television signal with sectors corresponding to individual line intervals of the television signal on adjacent tracks being aligned with each other in a direction normal to the tracks and the beginning and end of adjacent tracks being offset by a predetermined number of line intervals, said apparatus comprising a rotary transducer with two magnetic heads for reading the signal recorded on said tape, said two heads having mutually different azimuth angles

corresponding to the azimuth angles of the pair of heads used for recording said signals, means for moving said tape past said rotary transducer, means for selectively controlling said tape moving means so as to stop movement of said tape or to move said tape at a speed which deviates from said predetermined speed depending on a mode of operation selected by the user, means coupled to said magnetic head for delaying, by a variable amount, signals read from said tape, and second means for



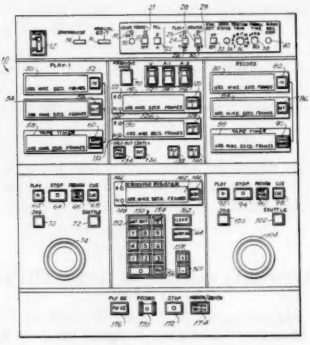
controlling said delay means in dependence on the selected mode, on the line offset between adjacent tracks, and on the magnetic head instanteously reading a given track so that the signals read from said tape which correspond to consecutive fields of said television signal are delayed by amounts such that the time intervals between every two consecutive vertical synchronizing pulses of each field are substantially equal and there is no phase jump between the horizontal synchronizing pulse trains of consecutive fields.

4,283,745

EDITING APPARATUS

Douglas D. Kuper, Campbell, and William A. Menezes, Mountain View, both of Calif., assignors to Sony Corporation, Tokyo, Japan

Filed Apr. 11, 1980, Ser. No. 139,443
Int. Cl.[3] G11B *27/02*
U.S. Cl. 360—13 **9 Claims**



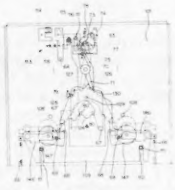
1. Editing apparatus for controlling the transfer of signals from a playback medium to a recording medium, said apparatus comprising a console including a plurality of display registers, including a play IN register for displaying play IN position data representing an edit-in point along said playback medium, a record IN register for displaying record IN position data representing an edit-in point along said recording medium, a play OUT register for displaying play OUT position data representing an edit-out point along said playback medium and a record OUT register for displaying record OUT position data representing an edit-out point along said recording medium, a plurality of register selector switches, each associated with and adjacent a respective one of said display registers and operable to select the display register associated therewith, and enable means manually operable to enable position data to be displayed in a selected one of said play In, record IN, play OUT and record OUT registers as a function of the position data displayed in the remainder of said registers; and central processing means responsive to the operation of said enable means and a selected one of said register selector switches to obtain data representing the duration between the edit-in and edit-out points as represented by the position data displayed in two of said registers, neither of which is associated with said selected register switch, to combine the duration data with the position data displayed in a third register, which third register is not associated with said selected register switch, to produce resultant position data, and to cause said resultant position data to be displayed in the register associated with said register selector switch.

4,283,746

ACTUATING DEVICE FOR THE ADVANCEMENT OF THE TAPE IN A CASSETTE-TYPE TAPE RECORDING/PLAYBACK APPARATUS

Vittorio Pera, Rome, Italy, assignor to Autovox S.p.A., Rome, Italy

Filed Jan. 18, 1980, Ser. No. 113,424
Claims priority, application Italy, Jan. 18, 1979, 47691 A/79
Int. Cl.[3] G11B *15/26, 15/44, 19/26*
U.S. Cl. 360—96.4 **7 Claims**



1. An actuating device for the advancement of the tape in a cassette-type recording/playback apparatus having a frame, two counterrotating flywheels driven through a belt transmission actuated by a motor, two capstans each of which is integral and coaxial with one of the flywheels, a pressure roller for each capstan, two hub carrying disks made to rotate around a pin attached to the frame, and a center line axis being defined, on said frame plane, which is equidistant from the axis of rotation of the two flywheels and equidistant from the axis of rotation of the hub carrying disks, comprising: a slider bound to the frame so as to translate parallelly with respect to the center line axis in order to assume an operative position and an idle position and biased by return springs towards the idle position; unidirectional motion transmitting means which transmit the motion of one fly wheel to the slider when the latter is in its idle position, and carry out the translation thereof towards its operating position, against the action of said return springs; an oscillating guide apt to perform an angular displacement between two set positions around a pivot which is integral with the frame, placed on the center line axis, said guide having two abutments thereon, each engageable with one of the pressure roller supports, depending on its set position, said guide being also provided with a guiding profile; a rocking arm which oscillates between two positions around a pivot fixed to said slider and having an elongation which, during travel of the slider towards its operative position, is apt to be guided by said guiding profile on the guide and that during translation of the slider towards its idle position is apt to push said guide towards its other set position and to assume the other of its two positions to engage with said guiding profile on the guide; a bistable element which rotates around a pivot which is integral with the frame, controlled by said rocking arm during travel of the slider towards its operative position, in order to move from one of its stable positions to the other, said bistable element being apt to control rotation of one or the other of said hub carrying discs depending on either one or the other of its two positions; two pressure roller supports connected with said slider to rotate, each of said rollers rotatably supporting a pressure

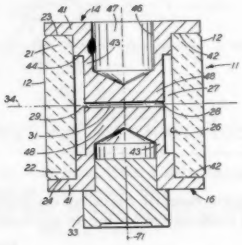
roller and biased resiliently towards their corresponding capstans, said supports being provided with an end shaped to comprise a support abutment for one of the stopping abutments on the guide so as to prevent, depending on the set position taken up by the guide, engagement of the pressure roller held by its corresponding support, with its related capstan so that with the guide in a first of its two set positions, translation of the slider towards the operative position carries a pressure roller into engagement with its corresponding capstan and maintains the other pressure roller disengaged from the capstan, so as to transfer and wind the tape in one of the two travelling directions, while returning of the slider to its idle position causes the guide to assume its other position, so that a further translation of the slider towards the operative position determines travel and winding of the magnetic tape in the opposite travel direction.

4,283,747

METHODS OF MAKING A GAS TUBE SURGE PROTECTOR

Carl C. Perkins, Jr., Prairie Village, Kans., assignor to Western Electric Co., Inc., New York, N.Y.

Filed Dec. 21, 1978, Ser. No. 972,106
Int. Cl.³ H02H *3/22*
U.S. Cl. 361—117 **6 Claims**



1. A method of making a surge protector having an elongate, electrically insulating housing including at least two electrodes one of which is mounted into each of two opposite ends of such housing, such electrodes having opposing surfaces transverse to a longitudinal axis of the housing which comprises:

assembling the at least two electrodes and the housing to form a gastight envelope holding the electrodes in spaced relationship opposite one another within the envelope;

testing electrical characteristics between such electrodes to determine a deviation of the width of a gap between such electrodes from a predetermined width; and

straining at least one tubular portion of said at least two electrodes of said envelope in the direction of the longitudinal axis of the housing to move at least one of the electrodes toward a face of one other of the at least two electrodes until the gap of a predetermined width has been established therebetween.

4,283,748

CIRCUIT ARRANGEMENT FOR OPERATING HEAVY-DUTY EQUIPMENT USING ELECTRICAL RELAYING DEVICE

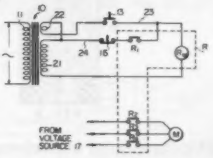
Miyuki Gotoh, Tokorozawa, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Mar. 14, 1979, Ser. No. 20,469
Claims priority, application Japan, Apr. 12, 1978, 53-42080
Int. Cl.³ H01H *47/10*
U.S. Cl. 361—154 **6 Claims**

1. A circuit arrangment for operating heavy-duty electrical equipment, comprising:

an electrical relay device having a relay coil, first relay contacts connected in a circuit for supplying a large amount of current from a first voltage source to said heavy-duty electrical equipment in response to energization of said relay coil and second relay contacts having the same current-carrying capacity as said first relay contacts;

a normally open switch connected in a circuit for supplying a small amount of current to said relay coil from a second voltage source to energize said coil in response to a closure of the switch, thereby closing said first and second relay contacts;



a holding circuit for supplying a small amount of current through said second relay contacts to said relay coil from said second voltage source for holding said relay coil in the energized condition in response to the closure of said second relay contacts and establishing a low impedance closed circuit through the closed, normally open switch and the closed second relay contacts; and

means for supplying a voltage to said closed low impedance circuit and causing a current to pass through said closed second relay contacts with sufficient magnitude to produce an arc that burns out objects which have collected between said second relay contacts.

4,283,749

APPARATUS FOR THE CONTROLLED DISCHARGE OF A CHARGED OBJECT

Rudolf G. Buser, Wall, and Hans E. Inslerman, Long Branch, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sep. 25, 1979, Ser. No. 78,628
Int. Cl.³ H05F *3/02*
U.S. Cl. 361—218 **18 Claims**

1. Apparatus for the controlled discharge of a charged object which comprises:

a first metallic member for contacting the object to be discharged;

a second metallic member for contacting the ground;

a plurality of conductive elements in loose contact one with the other for establishing a resistive discharge path from said first to said second metallic member; and

a corresponding plurality of discharge members connected to said conductive elements to provide additional discharge paths to the atmosphere, prior to contact of said apparatus with the ground.

4,283,750

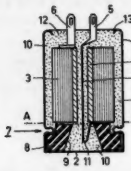
CAPACITOR HAVING A HOUSING PROVIDED WITH A CREASE WHICH IS EXPANDABLE IN REACTION TO OVERPRESSURE

Francois Deschanels, and Roger Gard, both of Tours, France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 19, 1979, Ser. No. 95,736
Claims priority, application France, Nov. 20, 1978, 78 32623
Int. Cl.³ H01G *1/11*
U.S. Cl. 361—274 **5 Claims**

1. A capacitor having a housing which is closed on one end

by means of a bottom and which accommodates a capacitor wrap, said wrap being provided with electrical connections which are fed out of the housing through the end opposite the bottom, said housing having a circumferential crease which is expandable in the axial direction of the wrap and which crease, when expanded, on its upper side supports the wrap and on its



lower side a plug-like member for anchoring one end of one of said electrical connections of the wrap, characterized in that the plug-like member is located between the expandable crease and the bottom of the housing and includes a hole which widens towards the bottom of said housing, which hole is filled with a synthetic resin in which one end of one of said electrical connections is anchored by means of a loop in said end.

4,283,751

VARIABLE CAPACITOR

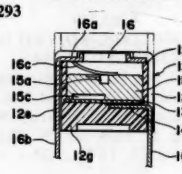
Tetsuo Tatsumi, Nagaokakyo, Japan, assignor to Murata Manufacturing Co., Ltd., Japan

Filed Mar. 26, 1979, Ser. No. 24,022

Claims priority, application Japan, Mar. 27, 1978, 53-39548[U]

Int. Cl.[3] H01G *5/06*

U.S. Cl. 361—293 **11 Claims**



1. (Thrice Amended) A variable capacitor, comprising:

a) a dielectric plate having first and second flat major surfaces;

b) a film of electrically conductive material [in contact with] *formed on* said second surface of said dielectric plate and defining a stator member;

c) a first elongated terminal plate having one end electrically connected to said film;

d) a substantially cylindrical casing made of electrically nonconductive material and having a bottom wall and a substantially cylindrical side wall integral therewith and being open at the top, said first elongated terminal plate and said dielectric plate being *directly* embedded in said casing in such a manner that:

(1) said first elongated terminal plate is maintained in contact with said film on said dielectric plate;

(2) said dielectric plate is stationarily positioned inside said casing *and non-rotatable with respect to said casing* with said second flat major surface against said bottom wall;

(3) said first major flat surface of said dielectric plate faces said open top of said casing; and

(4) said elongated terminal plate extends outside of said casing through said cylindrical wall;

e) a disc shaped rotor member made of electrically conductive material and having first and second flat surfaces, said rotor member being rotatably accommodated in said casing with said first surface thereof being held in contact with said first flat major surface of said dielectric plate;

f) a cap member made of electrically conductive material, said cap member being secured to said open top end of said cylindrical casing and enclosing said rotor member inside said casing; said cap member having an opening for affording access to the interior of said casing when said cap member is so secured; and said cap member being electrically connected to said rotor member;

g) spring means *integral with said cap member and* positioned between said cap member and said rotor member for urging said rotor member against said dielectric plate; and

h) a second elongated terminal plate *integral with said cap member and* having one end electrically connected to said cap member, and extending outside of said cylindrical casing.—.

4,283,752

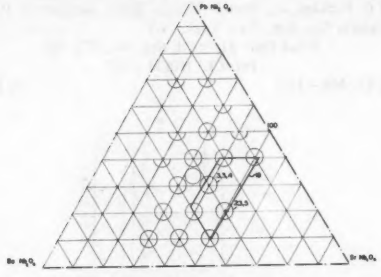
TERNARY NIOBATE DIELECTRIC COMPOSITIONS

Margaret M. Layton, Big Flats, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed May 1, 1978, Ser. No. 901,984

Int. Cl.[3] H01G *4/12*; H01B *3/12*

U.S. Cl. 361—321 **28 Claims**



1. A dielectric material consisting essentially of a fired ternary niobate composition having an approximate formula:

$$Pb_x\text{-}Ba_y\text{-}Sr_z(Nb_2O_6)$$

where x, y and z represent the mole fractions of each of Pb, Ba and Sr in said composition, the sum of x, y and z being 1,

x is from 0.1 to 0.4

y is from 0.1 to 0.4 and

z is from 0.4 to 0.5.

4,283,753

LOW FIRING MONOLITHIC CERAMIC CAPACITOR WITH HIGH DIELECTRIC CONSTANT

Ian Burn, Williamstown, Mass., assignor to Sprague Electric Company, North Adams, Mass.

Filed Sep. 28, 1979, Ser. No. 79,685

The portion of the term of this patent subsequent to Jan. 3, 1997, has been disclaimed.

Int. Cl.[3] H01G *4/12*; C04B *35/46*

U.S. Cl. 361—321 **12 Claims**

1. A ceramic capacitor comprising: a dielectric ceramic body, at least two spaced metal electrodes in contact with said body having a dielectric constant at 25° C. of at least 5000, said body containing a major portion of barium titanate, the positive ions in said body consisting essentially of:

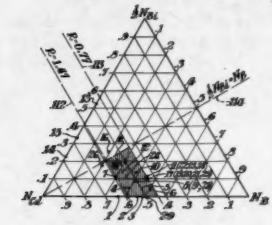
a number N_D of large divalent ions selected from Ba, Pb, Sr, Ca, and combinations thereof,

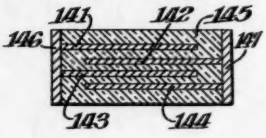
a number N_Q of small quadravalent ions selected from Ti, Zr, Sn, Mn, and combinations thereof,

a number N_X of donor ions capable of having a valence of greater than +4 as a small cation selected from Bi, Nb, Sb, Ta, W, Mo, and combinations thereof,

a number N_{CC} of charge compensating acceptor ions capable of having a valence of +1 as a large cation selected from Cd, Zn, Cu, Li, Na, and combinations thereof, and a

number N_G of glass-forming ions selected from B, Si, Ge, P, V, and combinations thereof wherein





$$\tfrac{1}{2} N_{Bi} + N_{Nb} + N_{Ta} + M_{Sb} + 2N_W + 2N_{Mo} = N_{X'}$$

$$0.4 \leqq \frac{N_{CC}}{N_{X'} + N_G - (N_D - N_Q)} \leqq 3.0 \text{ and}$$

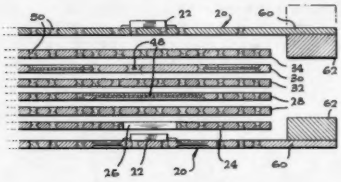
$$0.003 \leqq \frac{N_G}{N_X + N_{CC} + N_G + N_D + N_Q} \leqq 0.022.$$

4,283,754

COOLING SYSTEM FOR MULTIWAFER HIGH DENSITY CIRCUIT

Howard L. Parks, Woodland Hills, Calif., assignor to Bunker Ramo Corporation, Oak Brook, Ill.

Filed Mar. 26, 1979, Ser. No. 23,968
Int. Cl.³ H05K *7/20*
U.S. Cl. 361—382 **6 Claims**



1. A high density arrangement of integrated circuit devices comprising:

a stack of wafers including a plurality of component mount wafers formed primarily of metal and having overhanging edge portions along one side of the stack which extend beyond the side edges of other wafers of the stack, and a plurality of connect wafers disposed between said mount wafers, at least some of the adjacent wafers having through-wafer connections comprising a metal pad surrounded by a tube of dielectric material which is, in turn, surrounded by metal, and a multiplicity of said connection pads of adjacent wafers being aligned;

a multiplicity of button portions of malleable metal disposed between the connection pads of adjacent wafers;

a cooling arrangement including a field conduit extending along said one side of said stack;

a first clamp arrangement holding a portion of said stack inside said overhanging edges, in sufficient compression to deform said button portions into low resistance contact with said pads; and

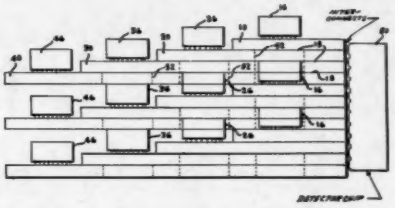
a second clamp arrangement holding said fluid conduit arrangement in tight thermal coupling to said overhanging mount wafer portions.

4,283,755

MODULATOR MULTILAYER DETECTOR

John M. Tracy, Thousand Oaks, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Feb. 5, 1980, Ser. No. 118,384
Int. Cl.³ H05K *1/14*
U.S. Cl. 361—393 **1 Claim**



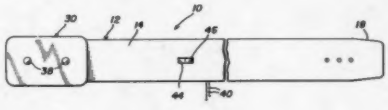
1. A modular multilayer detector interface comprising: a plurality of stacked circuit boards including, a plurality of modular integrated circuits mounted thereon, wherein said boards are of variable length and in juxtaposition and said boards have a recessed area for receiving the integrated circuit mounted on the board abutting said board, and lead means extending from said integrated circuit to one end of said board for connection to a detector.

4,283,756

FLASHING-LIGHT BELT

Turan M. Beamon, 2722 E. 77th St., Chicago, Ill. 60649

Filed Jun. 15, 1979, Ser. No. 48,709
Int. Cl.³ F21L *15/14*
U.S. Cl. 362—108 **7 Claims**



1. A belt comprising a flat flexible strip for encircling one's torso, and having an inside surface and an outside surface and two ends, a buckle on one end of said strip for removable attachment to a point on said strip adjacent the other end thereof, light means in said buckle having at least two bulbs and circuit means for flashing said bulb when energized, each of said bulbs and said circuit means being cased in a single package, conductor means on the inside surface of said strip and being electrically attached to said light means, switch means electrically connected to said conductor means for selectively opening and closing the current path defined thereby, and terminal means on said conductor means for attachment to a portable source of electrical power.

4,283,757

ILLUMINATED SCREWDRIVER

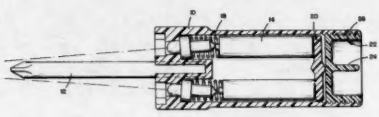
A. Eugene Nalbandian, Brea, and James P. Sullivan, Tustin, both of Calif., assignors to Tweezer-Lite, Inc., Brea, Calif.

Filed Jul. 9, 1979, Ser. No. 56,280
Int. Cl.³ B25B *23/18*
U.S. Cl. 362—120 **15 Claims**

1. An illuminated hand tool comprising a tool member mounted at the front end of a hollow handle body in which are

disposed a pair of two terminal light sources, a pair of spring members having a first end and a second end, and a pair of two terminal power sources;

each of said spring members being disposed between a respective light source and power source, the first end of each spring contacting one terminal of its respective light source, the second end of each spring being in electrical contact with one terminal of its respective power source, each said spring acting to bias the other terminal of each respective light source out of contact with the other terminal of each respective power source;



a single switch means rotatably mounted on the back end of said body for causing movement of said power sources upon rotation of said switch means so as to cause the other terminal of each respective power source to independently contact the other terminal of each respective light source thereby completing the respective circuits and lighting the respective light sources either serially or simultaneously.

4,283,758

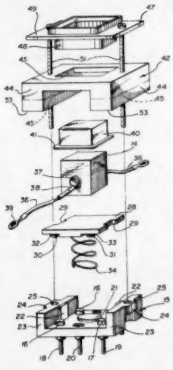
ENCAPSULATED NEON LAMPS

James H. Irving, 119 Ross Ave., Ottawa, Ontario, Canada

Filed Jul. 23, 1979, Ser. No. 60,032

Int. Cl.³ F21V *23/04*

U.S. Cl. 362—251 **10 Claims**



1. A compact light module for use with normal electrical utility supply voltage, the module comprising an assembly of a plurality of miniature neon lamps and resistors and two terminals, the lamps and resistors being connected to the terminals to provide a plurality of circuits connected permanently across the terminals, each circuit comprising a neon lamp and a resistor, the assembly being encapsulated in a rigid translucent plastics material through which the terminals project for connection to the supply voltage.

4,283,759

SWITCHING REGULATOR

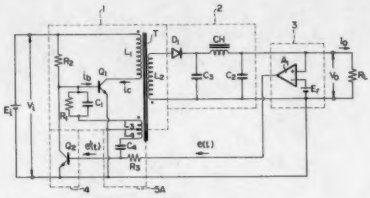
Tsutomu Koiki, Higashi Matsuyama, Japan, assignor to Toko, Inc., Tokyo, Japan

Filed Jul. 27, 1978, Ser. No. 928,441

Claims priority, application Japan, Aug. 1, 1977, 52/91425; Sep. 29, 1977, 52/117210; Feb. 24, 1978, 53/20480; Mar. 2, 1978, 53/23991; Apr. 26, 1978, 53/49453

Int. Cl.³ H02M *3/335*

U.S. Cl. 363—19 **7 Claims**



1. A switching regulator comprising a relaxation oscillator circuit for chopping a DC voltage supplied from an input power source to thereby drive a transformer; a rectifier circuit for rectifying the AC output of said transformer; a feedback circuit for comparing the rectified output voltage derived from said rectifier circuit with a reference voltage and applying a negative feedback to the base of the transistor or said oscillator circuit in accordance with the deviation of said rectified output voltage from said reference voltage; and means for permitting said negative feedback to be applied only during that period of the relaxation oscillation cyclic periods which is required to effect pulse width control when said transistor is switched from conduction to non-conduction.

4,283,760

METHOD AND APPARATUS FOR CONTROLLING DATA TRANSFER DIRECTION ON A DATA BUS

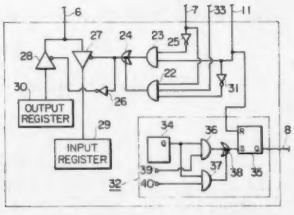
Yuzo Kita, Fuchu; Noboru Yamaguchi; Masaru Shibukawa, both of Kokubunji, and Kazuo Minorikawa, Nishi-ooizumimachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 10, 1978, Ser. No. 949,575

Claims priority, application Japan, Oct. 11, 1977, 52-120939

Int. Cl.³ G06F *13/00*

U.S. Cl. 364—200 **6 Claims**



3. In a system comprising a memory, and input/output controller for controlling data transfer to and from an input/output device, a data bus, and a direct memory access controller which generates a control signal applied in non-inverted form to at least one of said memory and said input/output controller, said control signal determining the direction of the data transfer in said input/output controller and said memory,

an arrangement for controlling the direction of data transfer on said data bus comprising

first means in said input/output controller for recognizing in an inverted manner the level of the control signal in said input/output controller only during the data transfer

cycle in the direct memory access transfer mode under a cycle steal mode, and

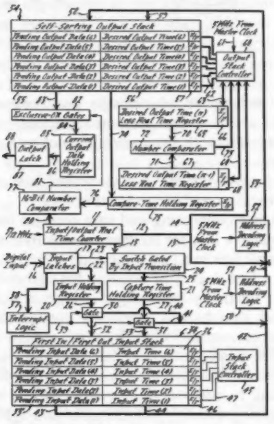
second means in said input/output controller for controlling the direction of transferring the data via said data bus in response to said control signal being recognized by said first means.

4,283,761

BINARY INPUT/OUTPUT PROCESSING IN A DIGITAL COMPUTER USING ASSIGNED TIMES FOR INPUT AND OUTPUT DATA

Brian S. Edelman, Dearborn, and Ralph L. Robinson, Jr., Canton Township, Wayne Co., both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jun. 13, 1979, Ser. No. 48,200
Int. Cl.³ G06F *3/00*
U.S. Cl. 364—200 **9 Claims**



1. In a digital computer that has a master clock for generating master clock pulses at a first frequency and that uses binary input data comprising a plurality of bits of information to produce binary output data in response to a program operating at least in part on one or more bits of the binary input data, improved processing of both the input and output data comprising the steps of:

(a) generating secondary clock pulses having a frequency that is less than the frequency of the master clock pulses;

(b) counting secondary clock pulses in a counter; and

(c) using the count of the secondary clock pulses in the assignment of real time to bytes to input data and in the comparison of real times with desired output times assigned to binary output data.

4,283,762

ANALOG COMPUTER CIRCUIT FOR CONTROLLING A FUEL INJECTION SYSTEM DURING ENGINE CRANKING

William J. Graessley, Ypsilanti, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Oct. 9, 1979, Ser. No. 83,018
Int. Cl.³ F02B *3/10*; F02M *51/00*
U.S. Cl. 364—431 **8 Claims**

1. An analog computer circuit for controlling a fuel injection system for an internal combustion engine during engine cranking, the fuel injection system being of the type including at least one electrically controllable fuel injector which, when energized, delivers a quantity of fuel to the engine that is proportional to the duration of the energization of the fuel injector, the fuel injection system further including circuit means coupled to the fuel injector for controlling the energization of the fuel injector in response to, and for the duration of, a cyclical logic level signal, applied by the aforementioned circuit means, the analog computer circuit generating the cyclical logic level signal and comprising:

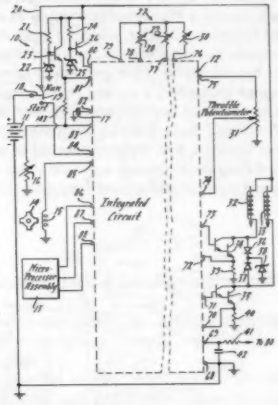
(a) means for supplying a DC voltage;

(b) a plurality of switching

(c) a capacitor;

(d) a plurality of electrical impedances coupled to the switching devices, the electrical impedances being selectively switched into conductive circuit with the capacitor by the switching devices;

(e) circuit means for controlling the switching devices as a function of the ratio of the voltage across the capacitor to the DC supply voltage;



(f) circuit means for charging the capacitor from the DC supply voltage through the plurality of electrical impedances;

(g) circuit means for discharging the capacitor at a frequency proportional to engine speed; and

(h) circuit means coupled to the electrically controllable fuel injector for generating the cyclical logic level signal, the logic level signal having a cyclically recurring duration, at one logic voltage level, that is proportional to the time over which the capacitor is charged from the DC supply voltage prior to its being discharged by the discharge circuit means.

4,283,763

SYSTEM FOR GRAPHIC REPRESENTATION OF VESSEL'S POSITION ON MERCATOR MAP

Lev V. Bylinsky, Pervomaisky prospekt, 46/1, kv. 14; Vladimir I. Gavrilenko, ulitsa Ostrovskogo, 24, korpus 1, kv. 35, both of Ryazan; Ivan F. Glumov, ulitsa Kotovskogo, 11, kv. 59, Gelendzhik Krasnodarskogo kraya; Vasily F. Denisov, ulitsa Internatskaya, 1, and Vadim V. Meer, ulitsa Poletaeva, 32, kv. 42, both of Ryazan, all of U.S.S.R.

Filed Sep. 13, 1979, Ser. No. 75,337
Int. Cl.³ G01C *21/22*
U.S. Cl. 364—449 **4 Claims**

1. A system for graphic representation of a vessel's position on the Mercator map, comprising:

a veocity and drift angle sensor having a signal generated at a first output corresponding to the speed of the vessel, and a signal generated at a second output signal corresponding to the drift angle of the vessel;

a computer computing the longitudinal and latitudinal velocity components, and having a first input and a second input respectively connected to said first and second outputs of said velocity and drift angle sensor, a third input,

and first and second outputs at which electric signals corresponding to longitudinal and latitudinal motion of the vessel are generated;

a heading sensor having an output connected to said third input of said computer;

a first multiplier having a first input connected to said first output of said computer, a second input and an output;

a second multiplier having a first input connected to said second output of said computer, a second input connected to said second input of said first multiplier, and an output;

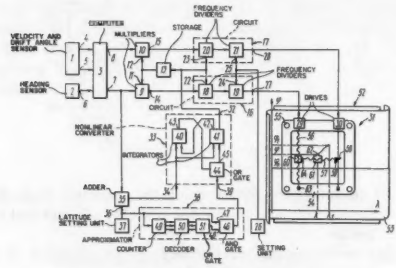
a storage having an input and an output connected to said second inputs of said first and second multipliers;

a first frequency divider with a controlled division coefficient and having a first input connected to said output of said first multiplier, a second input and an output;

a second frequency divider with a controlled division coefficient and having a first input connected to said output of said first frequency divider, a second input and an output;

a third frequency divider with a controlled division coefficient and having a first input connected to said output of said second multiplier, a second input connected to said second input of said first frequency divider, and an output;

a fourth frequency divider with a controlled division coefficient and having a first input connected to said output of said third frequency divider, a second input connected to said second input of said second frequency divider, and an output;



a plotter indicating the position of the vessel on the Mercator map and electrically coupled to said second frequency divider and said fourth frequency divider;

a first integrating drive of said plotter having an input connected to said output of said second frequency divider;

a second integrating drive of said plotter having an input connected to said output of said fourth frequency divider;

a unit for setting the scale of the standard parallel of the Mercator map having an output connected to said second inputs of said second and fourth frequency dividers:

a nonlinear converter reproducing an electric signal in the form of trigonometric latitude functions, and having a correction input, an information input and an output connected to said input of said storage and to said second inputs of said first and third frequency dividers;

an adder having a first input, a second input and an output, said first input of said adder being connected to said second output of said computer and said output of said adder being connected to said information input of said nonlinear converter;

a latitude setting unit successively setting the latitude of the standard parallel and the latitude of the initial position of the vessel, and having an output connected to said second input of said adder; and

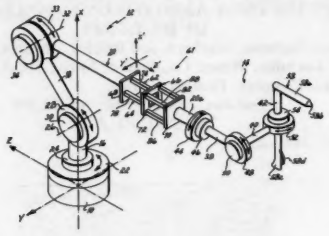
an approximator, of the correction for the meridional minute length at the location of the vessel, having an input connected to said output of said latitude setting unit and an output connected to said correction input of said nonlinear converter.

4,283,764

MANUALLY PROGRAMMABLE ROBOT WITH POWER-ASSISTED MOTION DURING PROGRAMMING

Gerald W. Crum, Elyria, and Brian M. Rooney, Amherst, both of Ohio, assignors to Nordson Corporation, Amherst, Ohio

Filed Oct. 12, 1979, Ser. No. 84,359
Int. Cl.[3] G05B *19/42;* G06F *15/46*
U.S. Cl. 364—513 **23 Claims**



1. A robot which can be manually programmed to repetitively execute a series of programmed motions, comprising:

a base engageable with a supporting structure for supporting said robot,

at least one relatively massive elongated link, said massive link having first and second extremities,

first means interconnecting said base and said first extremity of said massive link for facilitating selective movement of said massive link in a first direction relative to said base to provide a first degree of freedom for said robot,

at least one relatively lightweight elongated link having an outer end to which a device is connectable for programmed movement in a path having at least two degrees of freedom, said lightweight link also having an inner end,

second means interconnecting said inner end of said lightweight link to said second extremity of said massive link for facilitating selective movement of said lightweight link in a second direction relative to said massive link, said second direction being different from said first direction to provide said robot with a second degree of freedom and facilitate motion thereof in two different directions,

said lightweight link being movable relative to said massive link in said second direction without power assistance when a manual force is applied to the outer end of said lightweight link during manual programming of said robot, said massive link being relatively immovable in said first direction without power assistance in response to application of manual force to said outer end of said lightweight link during manual programming,

a first actuator associated with said massive link for moving, when actuated, said massive link in said first direction relative to said base,

a second actuator associated with said lightweight link for moving, when actuated, said lightweight link in said second direction,

a first position transducer associated with said massive link for providing a signal correlated to the position of said massive link,

a second position transducer associated with said lightweight link for providing a signal correlated to the position of said lightweight link,

a force transducer mounted in series with said massive and lightweight links between said base and said second interconnecting means for sensing the force to which said massive link is subjected to said first direction by the application of a manual programming force to said outer end of said lightweight link during manual programming of said robot, said manual programming force being applied in an arbitrary direction non-coincident with either of said first or second directions, but having force compo-

nents simultaneously in both said first and second directions to induce movement of said massive and lightweight links simultaneously in both said first and second directions, respectively, said force transducer providing an output signal having components correlated to (a) said manual programming force component applied to said outer end of said lightweight link in said first direction and (b) the inertial force due to acceleration of said lightweight link in said first direction,

inertial force compensation circuit means for cancelling at least a portion of said component of said force transducer output signal correlated to the inertial force of said lightweight link in said first direction and providing an inertial force compensated signal to said first actuator which is correlated to the component of said manual programming force applied in said first direction for producing, during manual programming, power-assisted movement of said massive link in said first direction while said lightweight link moves unpowered in said second direction, said power-assisted motion of said massive link and unpowered motion of said lightweight link combining to move said outer end of said lightweight link in said arbitrary direction in which said manual programming force is applied,

means to record the signals of said position transducers during manual programming, and

means to reproduce said recorded position transducer signals and apply them to their respectively associated actuators to execute said programmed motions without manual assistance.

4,283,765

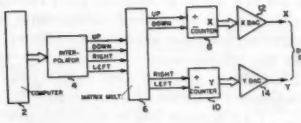
GRAPHICS MATRIX MULTIPLIER

Michael L. Rieger, Tigard, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Continuation of Ser. No. 896,538, Apr. 14, 1978, abandoned. This application May 25, 1979, Ser. No. 42,392

Int. Cl.[3] **G06F** *15/347, 3/14*

U.S. Cl. 364—521 **4 Claims**



1. A graphic display system for transforming and displaying computer-generated images of a pre-determined number of dimensions, D, on a display device, the display system comprising:

a digital interpolator for converting a computer instruction into digital clock pulses for driving the display device;

a matrix multiplier coupled to said digital interpolator for receiving said digital clock pulses and altering the sequence thereof according to data stored in said matrix multiplier, said matrix multiplier including accumulators which are each divided into an integer part and a fractional part, said integer part accumulating m bits and said fractional part accumulating n bits and having a carry/-borrow output;

m-bit counters comprising said integer part and also comprising axis counters of the display system for counting said digital clock pulses; and

digital-to-analog converters connected to receive the output of said m-bit counters for converting said output to analog signals for driving the display device.

4,283,766

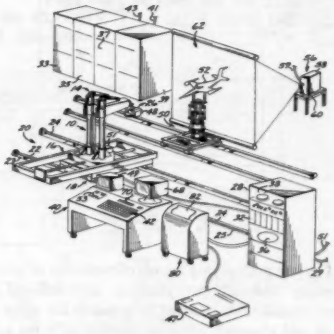
AUTOMATIC CAMERA CONTROL FOR CREATING SPECIAL EFFECTS IN MOTION PICTURE PHOTOGRAPHY

R. David Snyder; Donald W. Iwerks, both of Burbank; Robert R. Otto, Tarzana, all of Calif.; Lee R. Richardson, Scottsdale, Ariz., and David S. Inglish, La Crescenta, Calif., assignors to Walt Disney Productions, Burbank, Calif.

Filed Sep. 24, 1979, Ser. No. 78,302

Int. Cl.[3] **G03B** *21/32;* **G06F** *15/20*

U.S. Cl. 364—525 **22 Claims**



1. An automated motion picture camera control system comprising:

camera positioning means for positioning and holding a motion picture camera along a plurality of independent position axes,

memory means for storing electronically encoded desired co-ordinates of said positioning means for each of said position axes for each of a plurality of separated and enumerated film frames,

operator input means connected to said memory means for manually providing co-ordinates and for designating an associated film frame by number,

means connected to said memory means for deriving position-co-ordinates for each position axis for each frame between sequential designated frames,

actuating means for cycling said means for deriving sequentially through film frames between sequential designated film frames and for coupling said memory means and said means for deriving to said camera positioning means to direct said camera positioning means to the cor-ordinate positions of sequential film frames.

4,283,767

MULTIPLE CORRELATOR REFERENCE PROCESSOR

Hoyt S. Rountree, Portsmouth, R.I., assignor to Raytheon Company, Lexington, Mass.

Filed May 3, 1979, Ser. No. 35,750

Int. Cl.[3] **G06F** *15/20;* **G06G** *7/19;* **G01S** *3/86*

U.S. Cl. 364—574 **7 Claims**

1. A data processing system comprising:

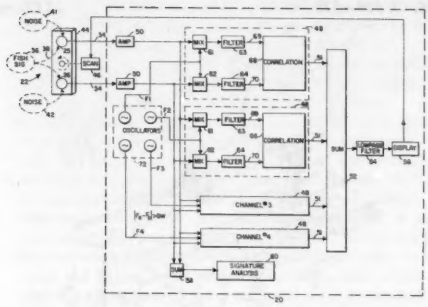
a plurality of pairs of signal processing channels each channel of a pair being response to a different one of two input signals, each of said channels having mixing means for translating said input signal to an intermediate frequency, each of said channels producing output signals having the same waveform in the absence of noise;

means for generating a set of reference signals of different frequencies, individual ones of said reference signals being coupled to said mixing means in respective pairs of said channels to provide mixer output frequency signals having a frequency less than said input signals, the frequencies of respective ones of said reference signals being separated

by an amount of frequency which is larger than the bandwidth of said input signals;

means for multiplying the output signal of the mixer of one channel of a pair with the output signal of the mixer in the other channel of said pair to provide a channel pair output signal; and

means for combining the channel pair output signals pro-



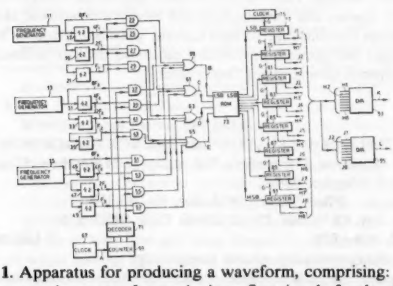
duced by the multiplying means of each pair of said signal processing channels to produce a combined signal wherein undulations induced by noise in the input signals each of said channels combine incoherently for a reduction in noise power while a component of said combined signal obtained from said input signals is coherently combined for increasing the ratio of signal power relative to noise power.

4,283,768

SIGNAL GENERATOR

Robert J. Scott, Furlong, Pa., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 30, 1979, Ser. No. 34,887
Int. Cl.[3] G06J *1/00;* H03B *19/00*
U.S. Cl. 364—607 **7 Claims**



1. Apparatus for producing a waveform, comprising:

generating means for producing a first signal of a plurality of predetermined non-equal frequencies and harmonics thereof;

multiplexing means connected to receive the first signal for multiplexing each of the frequencies and its associated harmonic with the other frequencies and harmonics to produce a second signal consisting of a series of parallel digital addresses; and

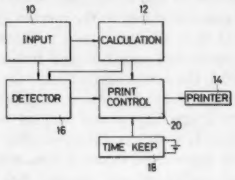
array means responsive to the second signal for producing a third signal consisting of a plurality of complex waveforms having different time delays.

4,283,769

TIME INFORMATION PRINT OUT AT A PRESELECTED CONDITION IN AN ELECTRONIC CALCULATOR

Atsushi Asada, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Mar. 7, 1979, Ser. No. 18,328
Claims priority, application Japan, Mar. 15, 1978, 53-30343
Int. Cl.[3] G06F *3/12, 15/02*
U.S. Cl. 364—710 **5 Claims**



1. An electronic calculator system having a printer for printing desired data produced by said calculator system, said system comprising:

a time generator for producing data representative of current time information;

counter means for producing an incremental count and for generating an output signal when said count reaches a predetermined level; and

printing selection means responsive to the output signal generated by said counter means for converting said current time information produced by said time generator into desired data and presenting this data to said printer;

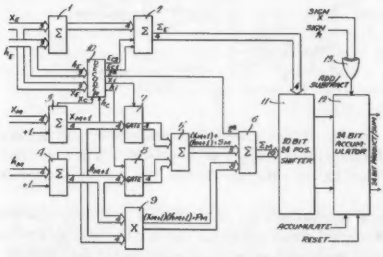
said printer printing said time information when count within said counter means reaches a predetermined level.

4,283,770

SIGNAL PROCESSOR FOR DIGITAL ECHO CANCELLER

Robert C. Stewart, Hinsdale, Ill., assignor to Tellabs, Inc., Lisle, Ill.

Filed Oct. 9, 1979, Ser. No. 82,710
Int. Cl.[3] H04B *3/20;* G06F *7/52*
U.S. Cl. 364—757 **37 Claims**



1. A system for multiplying first and second multibit factors quantized in conformity with a pseudo-logarithmic compression characteristic, wherein each factor has an exponent and a mantissa, comprising first circuit means for receiving the mantissas and for generating a data signal having a value in accordance with the sum and the product of the mantissas, said first circuit means also generating exponent carry signals as required by the values of the mantissas; second circuit means for receiving the exponents and said carry signals and for generating a control signal having a value in accordance with the sum thereof; and shifter circuit means for receiving said data and said control signals, said shifter circuit means having a plurality of outputs greater in number than the number of bits in said

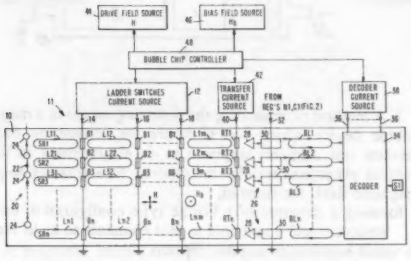
data signal and generating said data signal at individual ones of said outputs in accordance with the value of said control signal.

4,283,771

ON-CHIP BUBBLE DOMAIN RELATIONAL DATA BASE SYSTEM

Hsu Chang, Yorktown Heights, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 31, 1978, Ser. No. 929,584
Int. Cl.³ G11C *11/14, 19/00, 15/02*
U.S. Cl. 364—900 **13 Claims**



1. A magnetic bubble domain relational data base system using magnetic bubble domain devices, comprising:

a plurality of interconnected bubble domain chips, each of which includes at least one magnetic bubble domain storage chip for storing in tabular form on said chip a table of data forming a relation, said table including a plurality of rows and columns wherein said data is represented by coded magnetic bubble domains arranged in said columns and rows in said magnetic storage chip, said data having a predetermined relationship determined by said table of related data, and wherein each said storage chip includes:

a plurality of rows of parallel shift registers on said chip for storage of said data in the form of said coded bubble domains, each of which is segmentized into loops located along said rows where the loops of adjacent shift registers form columns of loops, and the loops of any one shift register form a row of said loops,

switch means on said chip and between adjacent loops in each row of loops for cross-linking said adjacent loops to interchange data between cross-linked loops, said switch means including means to cross-link loops in two columns of loops in said storage,

a plurality of associative search means on said magnetic chip for receiving data transferred from said shift registers to said associative search means and for parallel comparison of data from each row of shift registers with test criteria delivered to said associative search means wherein data which satisfies said test criteria is termed qualified data, said associative search means including gate means for blocking passage to an output means of bubble domains from those shift registers where mismatch with said test criteria is obtained and for allowing passage to said output means of bubble domains representing qualified data, there being one said associative search means for each shift register in said storage chip,

transfer means located on said chip for transferring data in parallel from a column of loops in said shift registers to said plurality of associative search means,

output means on said bubble domain chip for connecting each associative search means having qualified data therein with a single input/output port wherein simultaneous search of each row of shift registers occurs on said bubble chip prior to retrieval of qualified data items,

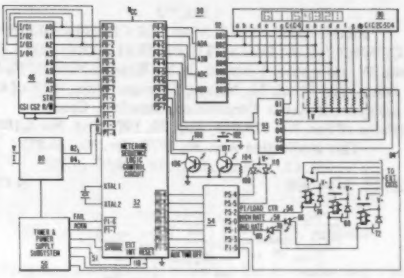
interconnection means connecting the output of a first bubble domain chip to the plurality of associative search means on a second bubble domain chip for using the output of said first chip as a test criterion in the associative search means of said second chip.

4,283,772

PROGRAMMABLE TIME REGISTERING AC ELECTRIC ENERGY METER HAVING ELECTRONIC ACCUMULATORS AND DISPLAY

Paul M. Johnston, Raleigh, N.C., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 30, 1979, Ser. No. 25,647
Int. Cl.³ G01R *11/57, 11/24, 21/06;* **G06F** *15/56*
U.S. Cl. 364—900 **15 Claims**



1. A time registering electric energy meter for measuring an AC electric energy quantity in response to time differentiated rates, said meter comprising:

means producing metering pulse signals at a rate responsive to said AC electric energy quantity to be measured;

means including first read-write memory means responsive to said metering pulse signals for accumulating variable coded values of one parameter of said AC electric energy quantity in separate ones of plural measuring data storage register means;

means producing regularly occurring timing signals;

means including second read-write memory means responsive to said timing signals for accumulating variable real time and date coded data in separate ones of plural storage register means, said plural storage register means including minutes, hours, day of the week and day of the year storage register means;

means including third read-write memory means for storing a plurality of fixed rate switch control point data codes in sequential ones of plural storage registers with each of said rate switch point data codes having identical data formats including encoded hour and encoded minutes data in time of day storage register means, an encoded one of a day of the week and a day of the year in a type of day storage register means and an encoded one of said time differentiated rates in a rate code storage register means; and

control logic means for sequentially comparing at a predetermined rate of said timing signals the real time and date coded data of said second memory means with the stored rate switch point data codes in a sequential order of comparison being the same as the sequential order of the storage thereof in said third memory means, said control logic further including means responsive to matching of common time and date coded and encoded data of said second and third memory means for producing a current rate switch time logic state therein, said control logic means further including means responsive to said current rate switch time logic state to effect a change in the accumulation of said coded values of said one parameter from one to another of said measuring data storage register means such that said parameter is accumulated in response to the encoded time differentiated rate of the rate switch point

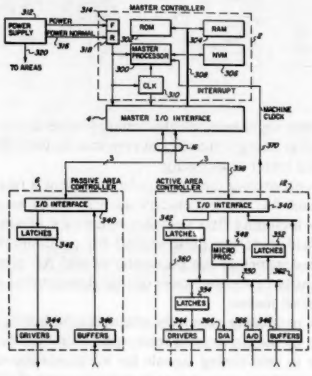
data code producing the matched comparison of said second and third memory means.

4,283,773

PROGRAMMABLE MASTER CONTROLLER COMMUNICATING WITH PLURAL CONTROLLERS

John W. Daughton, Perinton, N.Y.; Kenneth Gillett, Redondo Beach, and Frank M. Nelson, Sherman Oaks, both of Calif., assignors to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 829,013, Aug. 30, 1977, Pat. No. 4,183,089.
This application Apr. 30, 1979, Ser. No. 34,872
Int. Cl.[3] G06F *3/04, 9/06;* G03G *15/00*
U.S. Cl. 364—900 9 Claims



1. A data communication system comprising:

a. a programmable master controller including:

1. master program memory storage means for storing program words defining an operating program,
2. means for addressing said program words of said master program memory storage means,
3. an arithmetic and logic unit for processing said program words of said master program storage means, and
4. means for generating command bytes, said generating means operatively connected to said arithmetic and logic unit of said master controller.

b. a plurality of additional controllers, each of said additional controllers including:

1. means for receiving command bytes from said master controller, and
2. means for providing input data bytes to said master controller in response to said command bytes,

c. means for ORing selected input data bits of said input data bytes together to provide at least one of said input data bytes, and

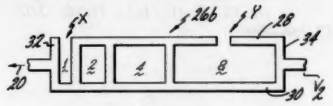
d. said additional controllers each including means for simultaneously transmitting said selected input bits to said master controller in response to a pre-determined command byte from said master controller, corresponding bits of said simultaneously transmitted bytes of said additional controllers having mutually exclusive data therein.

4,283,774

ON-CHIP METHOD OF BALANCING MEMORY DETECTORS AND BALANCED DETECTORS FORMED THEREBY

Sidney J. Schwartz, Vista; Farooq M. Quadri, San Jose, and Chung-Herng Hsin, Irvine, all of Calif., assignors to Burroughs Corporation, Detroit, Mich.

Filed Jun. 13, 1979, Ser. No. 48,087
Int. Cl.[3] G11C *19/08*
U.S. Cl. 365—8 10 Claims



1. A method of enhancing the detecting means in a magnetic bubble device which has structure for supporting bubbles thereon and elements disposed in an arrangement in which bubbles propagate serially in response to a rotating in-plane magnetic field, the steps of,

forming a detector of a bridge type configuration on said structure and connected to said elements so as to receive said bubbles propagated thereto,

forming parallel spaced apart end connected lines of resistance material with transverse spaced apart legs of resistance therebetween to form a ladder, said ladder being located in the output of said bridge configuration, and

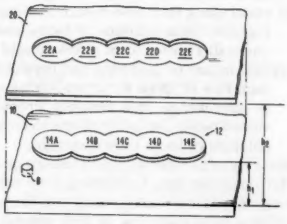
balancing the bridge, if necessary, by disconnecting certain portions of the ladder to vary the resistance through the ladder.

4,283,775

CONTIGUOUS DISK BUBBLE STORAGE

Mitchell S. Cohen, Ossining, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 18, 1979, Ser. No. 58,718
Int. Cl.[3] G11C *19/08*
U.S. Cl. 365—32 15 Claims



1. A propagation structure for movement of magnetic bubble domains in a substrate including a magnetic medium in which said bubble domains can be moved, comprising:

a first magnetic drive layer comprised of a magnetically soft material which is patterned to form contiguous propagation elements for movement of bubble domains therealong in response to the reorientation of a magnetic field in the plane of said first drive layer, the edges of said contiguous propagation elements along which said bubble domains move forming a generally undulating edge having cusp regions therealong,

a second magnetic drive layer comprised of a magnetically soft material and being non coplanar with said first magnetic drive layer, said second drive layer being on the same side of said substrate as said first drive layer and having a different spacing from snid substrate than said first magnetic layer, said second drive layer including

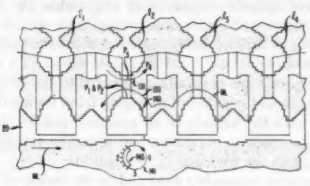
magnetic means for forming potential wells in said cusp regions for substantial control of bubble domain motion in said cusp regions, said bubble domain motion in regions outside of said cusp regions being substantially controlled by said first magnetic drive layer.

4,283,776

ION-IMPLANTED MAGNETIC BUBBLE MEMORY

Terence J. Nelson, New Providence, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 3, 1979, Ser. No. 99,554
Int. Cl.³ G11C *19/08*
U.S. Cl. 365—36 **7 Claims**



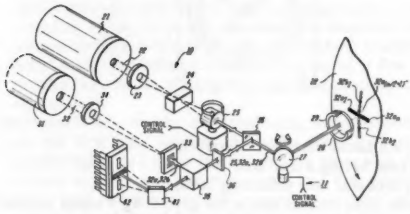
1. A magnetic bubble memory comprising a host layer of magnetic material in which magnetic bubbles can be moved along first and second paths in response to a magnetic field reorienting in the plane of said layer, a pattern of nonimplanted regions in said host layer for defining said paths in implanted regions thereabout, said nonimplanted regions defining first and second sets of periodic elements and an implanted gap separating said sets wherein said host layer has a three-fold axis of symmetry said memory being CHARACTERIZED IN THAT said gap has an axis aligned at about 90 degrees with respect to one of said axes of symmetry for permitting a relatively small gap to be achieved.

4,283,777

OPTICAL MEMORY HAVING A PARALLEL READ OUT

Donald J. Curry, Los Altos; Gordon R. Knight, Cupertino, and Daniel C. Kowalski, Portola Valley, all of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed May 14, 1979, Ser. No. 39,092
Int. Cl.³ G11C *13/04*
U.S. Cl. 369—32 **8 Claims**



1. In an optical memory having a recording medium with at least one band of tracks including a plurality of data tracks, a head containing a laser for supplying a beam of coherent radiation, and a plurality of detectors for generating individual video signals in response to radiation propogated from respective ones of said data tracks; the improvement comprising

a diffraction grating disposed between said laser and said recording medium for dividing said beam into a plurality of discrete read beams of substantially equal intensity, and

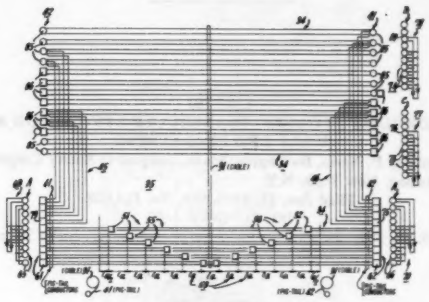
means disposed between said diffraction grating and said recording medium for simultaneously focusing said read beams onto respective ones of said data tracks, whereby said data tracks are read out in parallel.

4,283,778

PROGRAMMABLE SEISMIC CABLE

Herbert J. Meyer, Bellaire, and Thomas L. Smitherman, Houston, both of Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed May 29, 1979, Ser. No. 43,201
Int. Cl.³ G01V *1/22, 1/16*
U.S. Cl. 367—58 **5 Claims**



1. Programmable seismic cable for use in connecting a plurality of geophones to a recording station, comprising in combination

a predetermined length of cable having a plurality of conductor-pairs for connecting said geophones to said recording station,

a plurality of take-out connectors spaced apart along said cable for providing connections from said geophones to predetermined ones of said conductor-pairs,

a portion of said take-out connectors being electrically connected to first conductor-pairs extending to one end only of said cable,

another portion of said take-out connectors being electrically connected to second conductor-pairs extending to the other end only of said cable, and

a multi-circuit connector at each end of said cable with pig-tail conductor-pairs for making selectable group connections of said take-out connectors with third conductor-pairs of said cable,

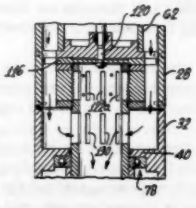
whereby predetermined groups of said take-out connectors may be selectively connected to said recording station.

4,283,779

TORSIONAL WAVE GENERATOR

Arthur E. Lamel, Arcadia, Calif., assignor to American Petroscience Corporation, Bakersfield, Calif.

Filed Mar. 19, 1979, Ser. No. 21,578
Int. Cl.³ G01V *1/40*
U.S. Cl. 367—82 **16 Claims**



1. A torsional wave generator capable of propagating tor-

sional waves along a drill string for the purpose of transmitting information signals, said torsional wave generator comprising:

reaction mass means rotatably coupled to the drill string; and

means effective independently of drill-string angular velocity, for producing a torque between said reaction mass means and the drill string, whereby a torsional wave is generated for propagation along the drill string.

4,283,780

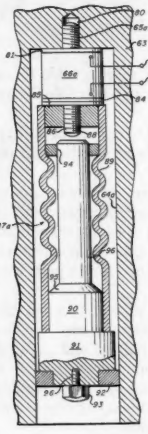
RESONANT ACOUSTIC TRANSDUCER SYSTEM FOR A WELL DRILLING STRING

Anthony P. Nardi, Burlington, Mass., assignor to Sperry Corporation, New York, N.Y.

Filed Jan. 21, 1980, Ser. No. 114,038

Int. Cl.³ G01V *1/40*

U.S. Cl. 367—82 **7 Claims**



1. In a system for the acoustic propagation of data along a bore-hole drilling string, primarily during drilling operation thereof, an acoustic transducer physically coupled to said bore-hole drilling string and comprising:

a piezoelectric transmitter having a first axis and adapted for compression and elongation along said first axis when excited by a variable electric field disposed thereacross,

a first fastener extending through said piezoelectric transducer means along said first axis,

a second fastener for affixing said piezoelectric transmitter means against a surface of said bore-hole drilling string and for holding said piezoelectric transmitter in cooperation with said first fastener in substantially fixed compression,

a corrugated tubular bellows-like spring affixed to and extending from said second fastener opposite said piezoelectric transmitter and having an axis colineal with said first axis, and

an elongate cylindrical mass having a cylindrical axis colinear with said first axis and extending from and coupled integrally with said corrugated tubular bellows-like spring into the interior thereof opposite said second fastener,

said first axis extending substantially parallel to the axis of said bore-hole drilling string.

4,283,781

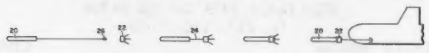
IN-FLIGHT HYDROPHONE DEPLOYMENT SYSTEM FOR UNDERWATER VEHICLES

Orrin W. Albert, Jr., Escondido, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 21, 1980, Ser. No. 113,917

Int. Cl.³ H04R *1/44*

U.S. Cl. 367—131 **13 Claims**



1. A hydrophone deployment apparatus for a torpedo shaped underwater vehicle comprising:

an annular drum releasably mounted about the tail portion of the vehicle;

a plurality of arms pivotally connected to the aft portion of the drum and capable of swinging from forward positions flush with the vehicle to aft positions behind the drum;

means for enabling retention and selective releasing of the arms from the forward flush positions;

a hydrophone releasably mounted on the inside of one of the arms; and

a cable connected between the hydrophone and the vehicle with an intermediate portion wound on said drum

whereby, upon travel of the vehicle, a release of the arms releases the drum and the vehicle swims away from the drum pulling the cable from the drum until all the cable is pulled, at which time the hydrophone is pulled from its arm and the drum is jettisoned to make the hydrophone operational.

4,283,782

ALARM TIMEPIECE

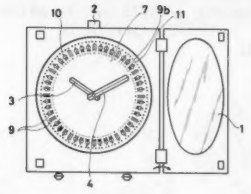
Munetaka Tamaru, and Minoru Natori, both of Tokyo, Japan, assignors to Citizen Watch Co., Ltd., Tokyo, Japan

Filed Jan. 9, 1979, Ser. No. 2,216

Claims priority, application Japan, Jan. 18, 1978, 53-4035; Feb. 25, 1978, 53-21214

Int. Cl.³ G04B *23/02, 19/04;* G04C *21/16*

U.S. Cl. 368—72 **8 Claims**



1. An alarm timepiece comprising:

a case having a dial face;

at least one time indicating hand;

time measurement means for generating a signal indicative of the time and for driving said at least one hand in response to said signal;

an alarm;

a plurality of time memory means, each of said time memory having a respective alarm time index rotatably mounted on a shaft, each of said time memory means for storing alarm energization information provided by the rotation of said shaft, said alarm energization information being stored in the time memory means corresponding to the time at which the alarm is to be energized, said respective alarm time index being rotated by said shaft to indicate the contents of its respective time memory means when said alarm energization information is stored, each of said time

memory means having alarm energization information stored thereon energizing said alarm when the respective time said memory means is associated with is reached;

a manually operated crown positioned outside the case; and

alarm set means for transmitting the motion of said crown to a desired one of said respective alarm index shafts to provide said shaft with said alarm energization information.

4,283,783

DRIVE CONTROL SYSTEM FOR STEPPING MOTOR

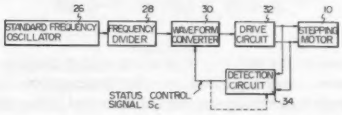
Fumio Nakajima; Takayasu Machida; Kenji Yamada, and Fumio Kanno, all of Tokorozawa, Japan, assignors to Citizen Watch Company Limited, Tokyo, Japan

Filed Nov. 21, 1979, Ser. No. 96,450

Claims priority, application Japan, Nov. 28, 1978, 53/145983; Dec. 5, 1978, 53/150909; Jul. 26, 1979, 54/94256

Int. Cl.³ G04B *19/00;* **G04C** *3/00;* **G05B** *19/40*

U.S. Cl. 368—76 **39 Claims**



1. An electronic timepiece powered by a battery, comprising, in combination:

a source of a standard frequency signal;

a frequency divider circuit responsive to said standard frequency signal for producing a unit time signal comprising a train of pulses;

waveform converter means responsive to said unit time signal in conjunction with a relatively high frequency signal produced by said frequency divider circuit for producing a drive input signal;

a drive circuit responsive to said drive input signal for producing a drive signal;

a stepping motor having a drive coil coupled to receive said drive signal, and periodically actuated by said drive signal to rotate a rotor thereof through a predetermined angle;

time indicating means driven by said stepping motor for indicating time information;

a sampling signal generating circuit for generating sampling signal pulses of a different phase in dependence on a state of said stepping motor; and

a detection circuit having input terminals coupled across said stepping motor drive coil and responsive to said sampling signal pulses for detecting the amplitude of a voltage developed across said drive coil during a sampling interval and producing a status control signal at first and second logic levels in dependence on said detected drive coil voltage;

said waveform converter means including means responsive to said first logic level of the status control signal for producing a first drive input signal to cause said drive circuit to drive said stepping motor in a first operating state, and responsive to said second logic level of the status control signal for producing a second drive input signal to cause said drive circuit to drive said stepping motor in a second operating state.

4,283,784

MULTIPLE TIME ZONE, ALARM AND USER PROGRAMMABLE CUSTOM WATCH

Douglas F. Horan, Los Gatos, Calif., assignor to Timex Corporation, Waterbury, Conn.

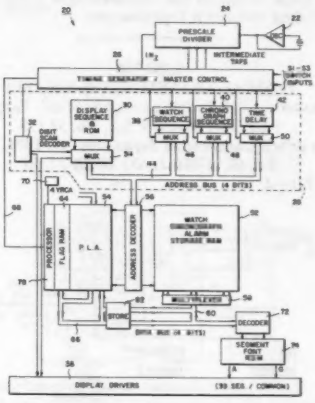
Filed May 9, 1978, Ser. No. 904,228

Int. Cl.³ G04C *19/00, 3/00;* **H03K** *19/08*

U.S. Cl. 368—87 **37 Claims**

1. A timekeeping circuit in an integrated circuit watch having a main random access memory for storing binary words and having a programmable logic array coupled to said main random access memory for selectively implementing timekeeping operations, said timekeeping circuit comprising:

a flag random access memory coupled to said programmable logic array for selectively storing a plurality of sets of flag bits, one or more of said flag bits being selectively transmitted to said programmable logic array for use during implementation of timekeeping operations; and



a processor coupled to said flag random access memory to process said plurality of sets of flag bits in response to a mode selection signal,

whereby a plurality of watch modes and functions are efficiently accomodated within said timekeeping circuit in a minimum amount of chip space, and whereby said integrated circuit permits user selection of watch functions.

4,283,785

OPTICAL INFORMATION RECORDING APPARATUS

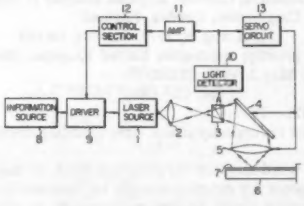
Toshimitsu Miyauchi, Hachioji, and Yoshito Tsunoda, Mitaka, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 26, 1979, Ser. No. 33,806

Claims priority, application Japan, Apr. 28, 1978, 53-49831

Int. Cl.³ G11B *7/00*

U.S. Cl. 369—116 **4 Claims**



1. An optical information recording apparatus comprising:

(a) a light source;

(b) a recording medium on which predetermined pulse information is successively recorded through the irradiation of recording light pulses emitted from said light source and modulated in accordance with said predetermined pulse information, the reflectivity of said recording medium being variable during the period of irradiation of the recording light pulse so that a reflected version of the

recording light pulse from said recording medium has a changing pulse width; and

(c) a control circuit section including a pulse width change detecting circuit means for receiving the reflected-light pulse from said recording medium and detecting the change in pulse width of the reflected-light pulse to produce an output relating to that change and a control circuit means associated with said light source for controlling an output power therefrom on the basis of the output of said pulse width change detecting circuit means so that the pulse width of the reflected-light pulse from said recording medium is kept constant.

4,283,786

DIGITAL TRANSMISSION SYSTEM

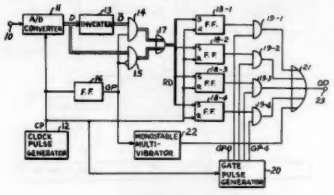
Shiro Okamura, 1494 Jindaijimachi, Chofu-shi, Tokyo, Japan

Filed Jun. 26, 1979, Ser. No. 52,115

Claims priority, application Japan, Jun. 27, 1978, 53/77869

Int. Cl.[3] G06F *11/00*; H04B *17/00*

U.S. Cl. 371—2 **7 Claims**



1. A digital transmission system comprising:

Means responsive to a sampling pulse, occurring during successive sampling periods, for encoding an information signal into a digital signal at each of said sampling periods, said digital signal including a plurality of bits differing in significance from each other;

means for converting said digital signal at integral multiples of every other sampling period to produce a converted digital signal;

means for transmitting said converted digital signal to receiving apparatus, said plurality of bits in each sampling period being transmitted in time-serial sequence; and

means included in said receiving apparatus for reconverting said converted digital signal back into said digital signal.

4,283,787

CYCLIC REDUNDANCY DATA CHECK ENCODING METHOD AND APPARATUS

John P. Chambers, Crawley, England, assignor to British Broadcasting Corporation, London, England

Filed Aug. 6, 1979, Ser. No. 64,188

Claims priority, application United Kingdom, Nov. 6, 1978, 43357/78; May 2, 1979, 15250/79

Int. Cl.[3] G06F *11/10*

U.S. Cl. 371—38 **3 Claims**

1. Cyclic redundancy check data encoding apparatus comprising

a multi-word memory for storing a block of data,

input means for entering a block of data into the memory, addressing means operative to provide an address designating a selected part of the stored block in the memory,

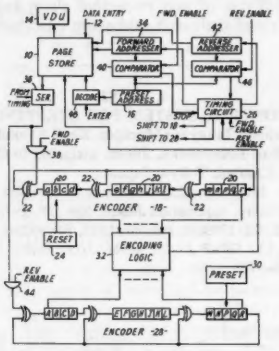
an encoder,

means for reading words from the memory to the encoder for encoding the words preceding the said selected part designated by the addressing means, the encoder including a register and being constructed to provide a first check word in the register of the encoder,

a complementary encoder,

means for reading words from the memory to the complementary encoder for encoding, in reverse order, the words succeeding the said selected part designated by the addressing means, the complementary encoder including a register and being constructed to provide a second check word in the register of the complementary encoder,

encoding logic responsive to the first and second check



words in the registers to generate a third check word, and means responsive to the encoding logic and the addressing means for entering the third check word in the memory to occupy the selected part of the block of data designated by the addressing means.

4,283,788

EQUALIZATION SYSTEM WITH PRESHAPING FILTER

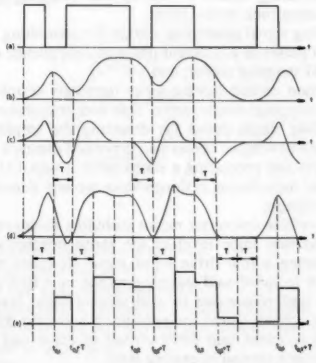
Giovanni Tamburelli, Turin, Italy, assignor to CSELT - Centro Studi e Laboratori Telecomunicazioni S.p.A., Turin, Italy

Continuation-in-part of Ser. No. 970,145, Dec. 18, 1978, abandoned, and Ser. No. 809,450, Jun. 23, 1977, Pat. No. 4,170,758. This application Aug. 10, 1979, Ser. No. 65,468

Claims priority, application Italy, Jun. 25, 1976, 68561 A/76; Sep. 30, 1976, 69333 A/76; Feb. 25, 1977, 67417 A/77; Dec. 21, 1977, 69863 A/77; Mar. 9, 1978, 67498 A/78

Int. Cl.[3] H04B *3/04*

U.S. Cl. 375—14 **16 Claims**



1. An equalization system for eliminating the effects of post-cursor and and precursor interference from a train of incoming signals in the form of digital pulses, comprising:

a transmission path with a receiving end carrying said incombing signals, the latter having a recurrence period T;

timing means connected to said receiving end for extracting said recurrence period T and establishing a succession of discrete intervals T related thereto;

pulse-shaping means connected to said receiving end and controlled by said timing means for deriving from said

incoming signals a compensating wave whose absolute amplitude at instants t_0+T substantially equals that of said incoming signals, t_0 being the instants at which said digital pulses reach their peak amplitudes, said pulse shaping means including circuitry for subtractively combining said incoming signals with said compensating wave to produce a resulting pulse train with amplitudes close to zero at said instants T_0+T;

an equalizer with a cascade of decision stages and interleaved algebraic adders connected to said pulse-shaping means for receiving said resulting pulse train therefrom, at least the first one of said decision stages being controlled by said timing means to evaluate samples of said pulse train at said discrete intervals, each of said decision stages being followed by a respective correction stage feeding an interference-compensating signal to the immediately following algebraic adder; and

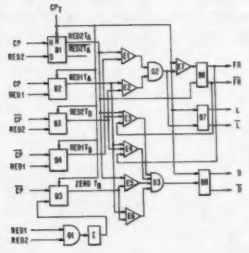
cascaded delay means connected between said pulse-shaping means and said algebraic adders for supplying the latter with differently delayed samples of said pulse train taken at staggered periods corresponding to the operating times of the respective decision and correction stages.

4,283,789

DATA TRANSMISSION METHOD AND DEVICES FOR PRACTICING SAID METHOD

Jean L. Monrolin, and Pierre Vachee, both of LaGaude, France, assignors to International Business Machines Corp., Armonk, N.Y.

Filed Aug. 29, 1979, Ser. No. 70,549
Claims priority, application France, Oct. 9, 1978, 78 29352
Int. Cl.³ H04B *1/20*; H04N *3/00*; H03K *13/00*
U.S. Cl. 375—55 **9 Claims**



1. A method for encoding a first and a second independent binary signal sequence as a single ternary signal sequence comprising the steps of:

grouping time corresponding binary signals of said first and second sequences into pairs, each pair comprising a first binary signal from said first sequence and a second binary signal from said second sequence, and

encoding each pair as a bipolar signal when said first binary signal has a first predetermined value, and as a biphase signal when said first binary signal has a value complementary to that of said first predetermined value.

4,283,790

TRANSISTORIZED MODULATOR FOR PULSE RADAR

Donald P. Clock, Granada Hills, and Finis C. Easter, Canoga Park, both of Calif., assignors to Sperry Corporation, New York, N.Y.

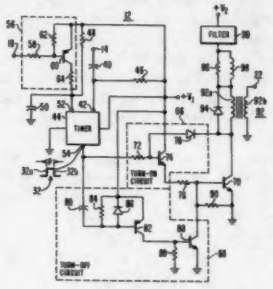
Filed May 31, 1979, Ser. No. 44,217
Int. Cl.³ H04L *27/04*
U.S. Cl. 375—71 **10 Claims**

1. In a pulse type radar, a solid state modulator comprising in combination:

means producing spaced apart pulses with each pulse of a time duration defined by a leading edge and a trailing edge;

transistor switch means comprising a transistor, having first and second electrodes defining therebetween the principal current conduction path of its said transistor, and having a third electrode, the potential between its first and third electrodes controlling the conduction of the principal current conduction path of its said transistor;

means coupled to said third electrode and responsive in sequence to the leading edge of each of said pulses to cause said transistor switch to be made conductive in its linear region;



means also coupled to said third electrode of said transistor switch and responsive in sequence to the trailing edge of each of said pulses to cause a current flow through said transistor switch third electrode to cause it to become nonconductive;

means responsive to said transistor switch being conductive for producing a bias voltage signal so long as said transistor switch is conductive; and

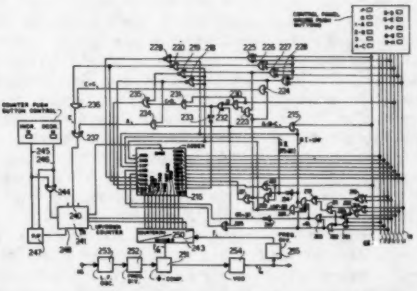
a radio frequency signal producing means responsive to said bias voltage signal to produce a radio frequency pulse of said time duration.

4,283,791

CIRCUIT ARRANGEMENT WITH FREQUENCY SYNTHESIS FOR THE TUNING OF RECEIVING SETS

Attilio Farina, Turin, Italy, assignor to Indesit Industria Elettrodomestici Italiana S.p.A., Turin, Italy

Filed Oct. 26, 1976, Ser. No. 735,564
Claims priority, application Italy, Nov. 11, 1975, 69771 A/75
Int. Cl.³ H04B *1/32*
U.S. Cl. 455—183 **18 Claims**



1. In an electronic circuit arrangement having a programmable frequency divider arranged to obtain from a voltage controlled tuning oscillator, as a function of a respective dividing number "N" in binary form for the tuning of each of a plurality

of tunable channels in a receiver, a respective frequency signal, and means for comparing said respective frequency signal with a frequency reference oscillation and producing a resultant signal supplied to said voltage controlled tuning oscillator for the desired tuning, the improvement comprising:

(a) a control panel having push buttons;

(b) first means actuable by at least one of said push buttons to produce signals representing at least one binary coded number K indicative of the number of a channel to which said receiver is to be tuned according to a predetermined assigned channel frequency;

(c) second means for producing output signals representing in binary coded form the value of the respective frequency of said voltage controlled oscillator, said value corresponding, for the various tunable channels, to the sum of a first constant binary coded number with the product of said binary coded number K and a second constant binary coded number and being obtained indirectly from said first and second constant binary coded numbers through intermediate expressions for each channel in response to the signals produced by said first means; and

(d) third means for obtaining said number N by multiplying said value of the respective frequency of said voltage controlled tuning oscillator obtained from said second means by a coefficient depending on the value of said reference oscillation frequency.

4,283,792

AUTOMATIC FINE TUNING CIRCUIT

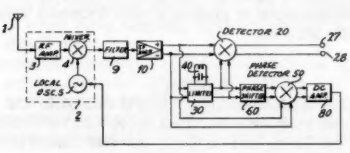
Masayuki Hongu, Kawasaki; Shigeru Ohmuro, Higashimine, and Masaharu Tokuhara, Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Mar. 29, 1979, Ser. No. 25,034

Claims priority, application Japan, Mar. 30, 1978, 53-37115; Mar. 30, 1978, 53-37116

Int. Cl.³ H04B *1/26*; H04N *5/50*

U.S. Cl. 455—192 **6 Claims**



1. A circuit for a radio frequency receiving system of the type having means for providing a radio frequency input and a tuning circuit including a local oscillator effective to generate a local oscillator frequency for producing an intermediate frequency signal comprising: electrical means for varying said local oscillator frequency in response to an automatic fine tuning control signal so that said intermediate frequency signal will substantially have a desired intermediate frequency; means for deriving an intermediate frequency carrier signal from said intermediate frequency signal; capacitor means for shifting the phase of said intermediate frequency carrier signal 90 electrical degrees; phase detector means including resonant means resonant at substantially said desired intermediate frequency, and being responsive to a predetermined phase difference between said phase shifted intermediate frequency carrier signal and a signal having substantially the same fundamental frequency and phase as said intermediate frequency signal for producing said automatic fine tuning control signal; and means for preventing interaction between said resonant means of said phase detector means and said means for deriving an intermediate frequency carrier signal, said means for preventing including buffer amplifier means to which a phase shifted signal from said capacitor means is applied said buffer amplifier means being effective to isolate its input from phase changes at its output.

4,283,793

MUTING SIGNAL GENERATION CIRCUIT FOR AN FM RECEIVER

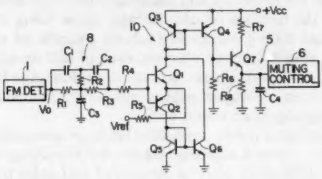
Tatsuo Numata, Tokyo, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Oct. 2, 1979, Ser. No. 81,240

Claims priority, application Japan, Oct. 6, 1978, 53/123743

Int. Cl.³ H04B *1/16*

U.S. Cl. 455—213 **10 Claims**



1. In an FM receiver of the type having an FM detector, a muting circuit comprising:

a band elimination filter means connected to said FM detector for eliminating the information content of the output of said FM detector and passing to an output thereof high frequency noise and the d.c. component in the FM detector output, and

circuit means connected to the output of said band elmination filter means for generating a muting output signal in response to either one of said d.c. component and said noise being above a predetermined level.

4,283,794

MEASURING RADIO-FREQUENCY IMPEDANCE

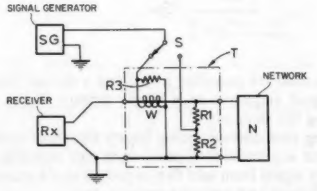
Michael J. Underhill, Faygate, and Peter A. Lewis, Brighton, both of England, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 19, 1979, Ser. No. 21,760

Claims priority, application United Kingdom, Mar. 20, 1978, 10888/78

Int. Cl.³ H04B *17/00*; G01R *27/08, 27/16*

U.S. Cl. 455—226 **8 Claims**



4. A method of deriving radio-frequency impedance information of an electrical network, wherein the method comprises:

coupling a radio receiver to a port of the network;

generating two radio-frequency signals consisting respectively of a predetermined radio-frequency current and a predetermined radio-frequency voltage;

injecting said radio-frequency current in parallel with said port of said network and injecting said radio-frequency voltage in series both with said port and with said radio receiver for producing resultant signals in said radio receiver;

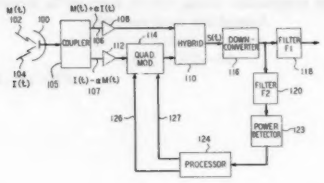
detecting said resultant signals with said radio receiver; and

deriving, from the detected signals, information of the radio-frequency impedance presented by said network at said port.

4,283,795
ADAPTIVE CROSS-POLARIZATION INTERFERENCE CANCELLATION ARRANGEMENTS

Michael L. Steinberger, Colts Neck, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 3, 1979, Ser. No. 81,366
Int. Cl.³ H04B *1/10*
U.S. Cl. 455—283 **9 Claims**



1. An adaptive cross-polarization interference cancellation arrangement comprising:

an antenna **(100)** capable of receiving a signal which may include a first desired signal **(102)** polarized in a first direction and a second interfering signal **(104)** polarized in a second direction orthogonal to the first direction and comprising cross-polarization components thereof;

means **(105)** coupled to the antenna capable of separating the received signal into third and fourth signals comprising only components of the received signal including the first and the second polarization directions, respectively, and transmitting the third and fourth signals along respective first **(106)** and second **(107)** paths;

means **(114)** capable of adjusting the phase and amplitude of the fourth signal in the second path in response to control signals;

means **(110)** capable of combining the third and the adjusted fourth signals to generate an output signal which primarily includes the first desired signal; and

means **(124)** capable of generating the appropriate control signals to the adjusting means to appropriately adjust the amplitude and phase of the fourth signal

characterized in that

the generating means **(124)** comprises:

means **(120**, FIG. **1**; **172**, **179**, **180**, FIG. **5)** coupled to the output of the combining means capable of extracting a sample of the cross-polarization components of the second interfering signal remaining in the output signal from the combining means;

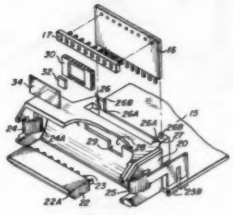
power detection means **(123**, FIG. **1**; **181**, FIG. **5)** capable of generating an output signal representative of the power envelope of the output signal of said extracting means; and

a processor **(124)** capable of generating the appropriate control signals, in response to the output signal from said power detection means, for transmission to the adjusting means for appropriately adjusting the phase and amplitude of the fourth signal to achieve maximum cancellation of cross-polarization components of the second interfering signal in the third signal at the output of the combining means.

4,283,796
PORTABLE DEVICE WITH HOUSING FOR BATTERY AND PLUG-IN MODULE

Mark F. Hughes, Ft. Lauderdale, Fla., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 28, 1980, Ser. No. 144,134
Int. Cl.³ H04B *1/08;* **H05K** *7/00*
U.S. Cl. 455—349 **9 Claims**



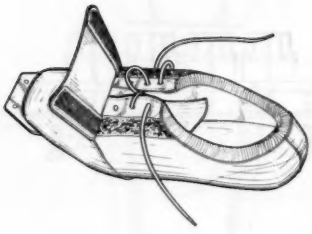
1. In a portable electronic device which includes a housing having an opening for receiving a battery for energizing the device, and which device is adapted for different operations and includes a removable module for controlling its operation, the combination including:

retainer means within the housing for receiving the battery when inserted through the housing opening, said retainer means having an opening for receiving the module,

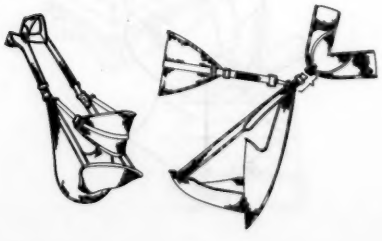
connector means within the housing for receiving the module and making connections thereto, and

support means for said connector means adjacent said retainer means for holding said connector means in position to receive a module inserted through the retainer means opening.

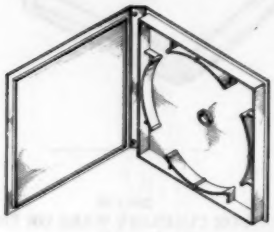
260,120
CROSS COUNTRY SKI BOOT
Kjell Aarflot, Gardeveien 2, Oslo 3, Norway
Filed Apr. 20, 1978, Ser. No. 898,541
Claims priority, application Norway, Oct. 24, 1977, 58670
The portion of the term of this patent subsequent to Mar. 31, 1995, has been disclaimed.
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—276



260,121
INFANT CARRIER
Richard B. Cable, and Willie D. Cable, both of 3063 Waterdale Dr., Loveland, Colo. 80537
Filed Nov. 9, 1977, Ser. No. 850,022
Term of patent 14 years
Int. Cl. D3—*99*
U.S. Cl. D3—31



260,122
FILM STORAGE BOX
Susan M. Turner, Oceanport, N.J., assignor to Universal City Studios, Inc., Universal City, Calif.
Filed Jun. 15, 1979, Ser. No. 48,873
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D3—35



260,123
CHAIR
Thomas Lamb, 9180 Weston Rd., Woodbridge, Ontario, Canada
Filed Oct. 30, 1978, Ser. No. 956,145
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—41

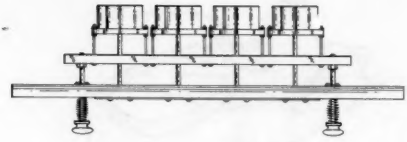
260,124
CHAIR
Rosemary T. Henderson, 3684 Walden Pl., Carmel, Ind. 46032
Filed Mar. 19, 1979, Ser. No. 22,034
Term of patent 7 years
Int. Cl. D6—*01*
U.S. Cl. D6—67

260,125
SEAT CUSHION
Jody B. Rogers, 2732 Pacific Coast Hwy., Lomita, Calif. 90717
Filed Jul. 24, 1978, Ser. No. 927,673
Term of patent 14 years
Int. Cl. D6—*09*
U.S. Cl. D6—201

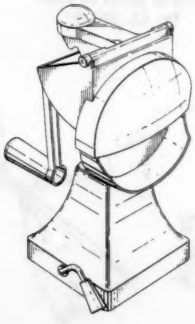
260,126
DECAL FOR CULINARY WARE OR THE LIKE
Estelle G. Rothstein, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.
Filed Jun. 29, 1979, Ser. No. 53,359
Term of patent 14 years
Int. Cl. D07—*01;* D19—*08*
U.S. Cl. D7—39

260,127
DECAL FOR A PLATE OR THE LIKE
Estelle G. Rothstein, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.
Filed Jun. 29, 1979, Ser. No. 53,360
Term of patent 14 years
Int. Cl. D07—*01;* D19—*08*
U.S. Cl. D7—39

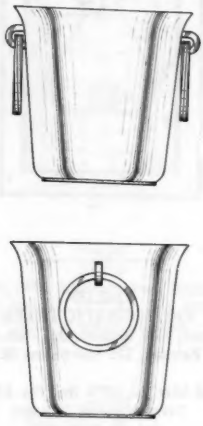
260,128
ROSETTE IRON
Michael J. Sommerfeld, 1126 Dennis St., Chippewa Falls, Wis. 54729
Filed Sep. 20, 1978, Ser. No. 945,178
The portion of the term of this patent subsequent to Sep. 30, 1994, has been disclaimed.
Term of patent 14 years
Int. Cl. D07—*02*
U.S. Cl. D7—43



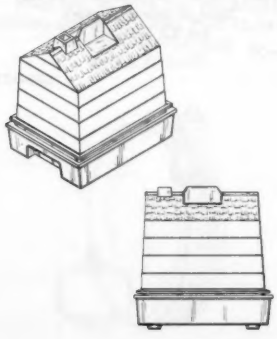
260,129
MACHINE FOR GRATING, SLICING AND/OR GRINDING FOODSTUFFS
So Shun, 77, Hoi Yuen Rd., Flat B, 2nd Flr., Yip Fat Industrial Bldg., Kwung, Kowloon, Hong Kong
Filed Sep. 28, 1979, Ser. No. 79,719
Claims priority, application United Kingdom, May 8, 1979, 989,814/79
Term of patent 14 years
Int. Cl. D07—*04*
U.S. Cl. D7—47



260,130
CHAMPAGNE COOLING BUCKET OR THE LIKE
Alain D. Perrin, Rueil Malmaison, France, assignor to Interdica, S.A., Villars-sur-Glane, Switzerland
Filed Feb. 23, 1979, Ser. No. 14,761
Claims priority, application Hague, Aug. 29, 1978, 67448
Term of patent 14 years
Int. Cl. D07—*01*
U.S. Cl. D7—70

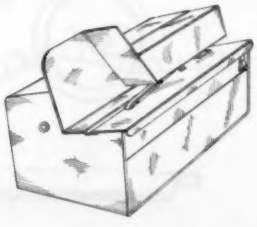


260,131
HOT DOG COOKER
Russell D. Hiatt, West Bend, Wis., and David L. Painter, Glenview, Ill., assignors to Dart Industries Inc., Los Angeles, Calif.
Filed Jun. 8, 1979, Ser. No. 46,879
Term of patent 14 years
Int. Cl. D07—*02*
U.S. Cl. D7—85

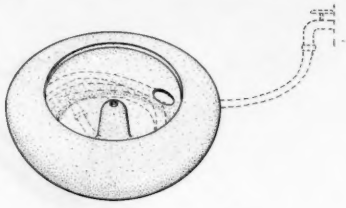


260,132
CABLE CUTTER
Frank E. Shaffer, P.O. Box 1546, Costa Mesa, Calif. 92626
Filed Sep. 22, 1978, Ser. No. 944,926
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—52

260,133
LETTER OPENER
John J. Power, Westbury, N.Y.; Raymond H. Van Wagener, Darien, Conn.; John C. Costello, Syracuse, and Arthur J. Pulos, Fayetteville, both of N.Y., assignors to Swingline Inc., Long Island City, N.Y.
Filed May 16, 1978, Ser. No. 906,767
Term of patent 14 years
Int. Cl. D8—*04*
U.S. Cl. D8—61

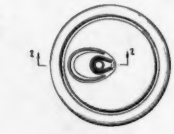


260,134
GARDEN HOSE COILING DEVICE
Riffy Bercu, 4016 Sawtelle Blvd., Los Angeles, Calif. 90066
Filed Oct. 24, 1979, Ser. No. 87,710
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—358

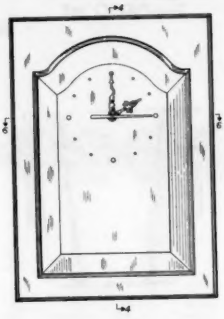


260,135
ADJUSTABLE SHADE MOUNTING HEAD AND PULL-ROPE GUIDE ASSEMBLY
Lyman N. Fairbanks, 840 S. Pickett St., Alexandria, Va. 22304
Filed Jul. 31, 1979, Ser. No. 62,495
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—377

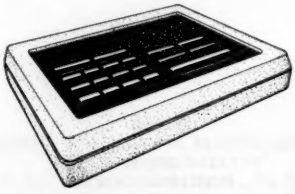
260,136
CAN END
Peter L. Revill, Middle Park, Australia, assignor to The Broken Hill Proprietary Company Limited, Melbourne, Australia
Filed Nov. 28, 1978, Ser. No. 964,338
Claims priority, application Australia, May 30, 1978, 74933/78
Term of patent 14 years
Int. Cl. D09—*99*
U.S. Cl. D9—438



260,137
COMBINED CLOCK AND CABINET DOOR PANEL
Rodney D. Rush, Rte. 3, Box 282, Lineville, Ala. 36266
Filed Mar. 30, 1979, Ser. No. 25,334
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D10—2



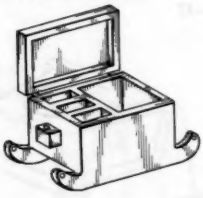
260,138
PHOTOGRAPIC TIMER
Darwin E. Chapman, 3481 Kenneth Dr., Palo Alto, Calif. 94306, and James M. Zeiszler, 275 Hawthorne St. #127, Palo Alto, Calif. 94301
Filed Mar. 22, 1979, Ser. No. 23,025
Term of patent 14 years
Int. Cl. D10—*03*
U.S. Cl. D10—40



260,139
ILLUMINABLE PENDANT, CHARM OR THE LIKE
Jason W. Gould, P.O. Box 2262, Leucadia, Calif. 92024
Filed Jun. 15, 1979, Ser. No. 48,913
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—75

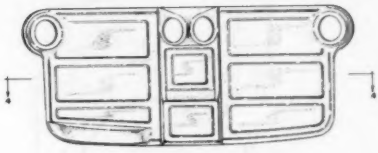
260,140
JEWELRY PENDANT
Georges Bicenko, 8 rue Paul Landrin, 83 Toulon, France
Filed Nov. 7, 1978, Ser. No. 959,192
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—79

260,141
SLED
Angelina M. West, 2605 Academy Ave., Holmes, Pa. 19043
Filed Aug. 31, 1977, Ser. No. 808,540
Term of patent 14 years
Int. Cl. D12—*14*
U.S. Cl. D12—9



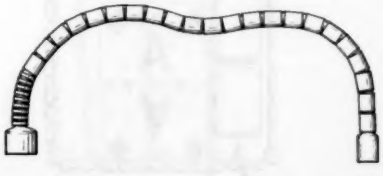
260,142
VEHICLE TIRE
Hiroyoshi Takigawa, Kodaira, and Hiroshi Kojima, Hino, both of Japan, assignors to Bridgestone Tire Co., Ltd., Tokyo, Japan
Filed Apr. 26, 1979, Ser. No. 33,632
Claims priority, application Japan, Nov. 22, 1978, 53-49308
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D12—142

260,143
VEHICLE OVERHEAD CONSOLE
Fred O. Hoese, 30706 Wildcat Dr., Bulverde, Tex. 78163
Filed Jun. 18, 1979, Ser. No. 49,741
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—155

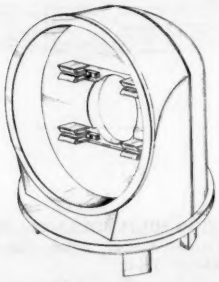


260,144
IGNITION HIGH VOLTAGE CORD COVER
Yoshimi Miyamoto, Toyota, Japan, assignor to Nippondenso Co., Ltd., Kariya, Japan
Filed Feb. 28, 1979, Ser. No. 15,921
Claims priority, application Japan, Aug. 29, 1978, 53-36550
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—13

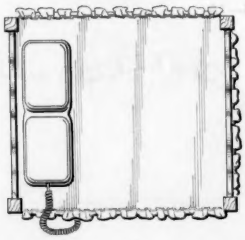
260,145
IGNITION HIGH VOLTAGE CORD COVER
Yoshimi Miyamoto, Toyota, Japan, assignor to Nippondenso Co., Ltd., Kariya, Japan
Filed Feb. 28, 1979, Ser. No. 15,922
Claims priority, application Japan, Aug. 29, 1978, 53-36551
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—13



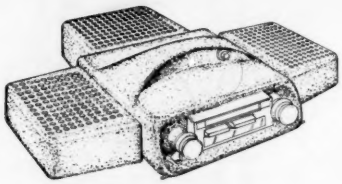
260,146
ELECTRICAL KILOWATT-HOUR METER POSITION ADAPTER
Mario Salazar, 4524 N. Pershing St., San Bernadino, Calif. 92407
Filed Jan. 19, 1979, Ser. No. 4,900
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—31



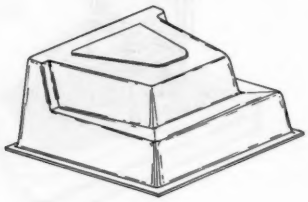
260,147
TELEPHONE
Wesley L. Thomas, 109 S. Catalina St., Los Angeles, Calif. 90004
Filed May 7, 1979, Ser. No. 36,585
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—53



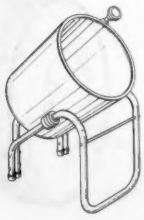
260,148
PORTABLE MOTOR VEHICULAR RADIO OR SIMILAR ARTICLE
Lennart Berg, Frösön, Sweden, assignor to Polarn Innovation Aktiebolag, Ostersund, Sweden
Filed Apr. 24, 1978, Ser. No. 899,631
Claims priority, application Sweden, Oct. 24, 1977, 2135/77
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—70



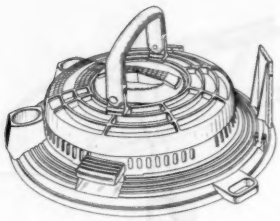
260,149
LAWN MOWER COVER
David B. Harris, 3113 Amherst Rd., Rocky Mount, N.C. 27801
Filed Feb. 26, 1979, Ser. No. 15,447
Term of patent 14 years
Int. Cl. D15—*03*
U.S. Cl. D15—17



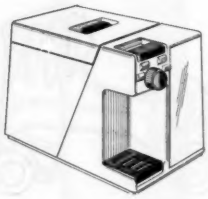
260,150
PORTABLE MIXER
Clarence K. Palmer, R.F.D. #1, Polo, Ill. 61064
Filed Feb. 9, 1979, Ser. No. 11,037
Term of patent 14 years
Int. Cl. D15—*04*
U.S. Cl. D15—19



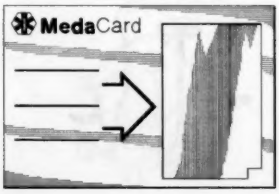
260,151
TOP COVER FOR TANK TYPE SUCTION CLEANER
Eugene F. Martinec, East Cleveland, Ohio, assignor to Health-Mor Inc., Chicago, Ill.
Filed Oct. 7, 1977, Ser. No. 840,308
Term of patent 14 years
Int. Cl. D15—*05*
U.S. Cl. D15—62



260,152
BEVERAGE DISPENSING MACHINE
Samuel C. Crosby, Jr., Decatur, Ga., and Robert B. Whorton, III, Spartanburg, S.C., assignors to Tannetics, Inc., Erie, Pa.
Filed Jul. 2, 1979, Ser. No. 53,948
Term of patent 14 years
Int. Cl. D15—*08*
U.S. Cl. D15—112

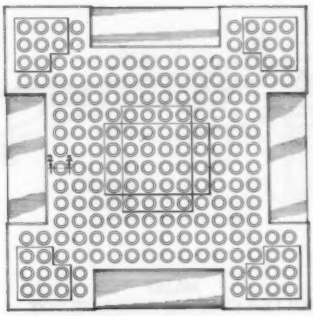


260,153
MEDICAL IDENTIFICATION CARD
Norman R. Koltys, Marietta, Ga., assignor to Charles F. Manley, Farmington Hills, Mich. and Pamela Toze, Atlanta, Ga., part interest to each
Filed Sep. 18, 1978, Ser. No. 943,109
Term of patent 14 years
Int. Cl. D19—*05*
U.S. Cl. D19—10



260,154
COMBINED TABLE TENNIS TABLE AND REBOUND SIDE WALLS
John A. Dremel, 7646 Denio, Citrus Heights, Calif. 95610
Filed Mar. 23, 1979, Ser. No. 23,143
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—14

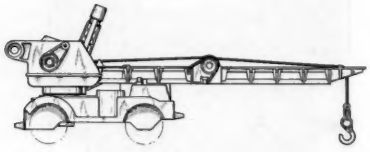
260,155
GAME BOARD
Adolph E. Goldfarb, 4614 Monarca Dr., Tarzana, Calif. 91345, and Hans B. Petersen, San Clemente, Calif., assignors to Adolph E. Goldfarb, Tarzana, Calif.
Filed Feb. 2, 1979, Ser. No. 8,958
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—20



260,156
DECK OF CARDS
Angelus M. Persons, 112 Conklin St., Syracuse, N.Y. 13209
Filed Aug. 21, 1978, Ser. No. 935,732
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—45

260,157
TOY FASTENER
Mel Appel, 9 Nottingham Rd., Livingston, N.J. 07039, and Paul B. Means, Basking Ridge, N.J., assignors to Mel Appel, Livingston, N.J.
Filed Feb. 23, 1979, Ser. No. 14,599
Term of patent 14 years
Int. Cl. D21—*01;* D8—*08*
U.S. Cl. D21—109

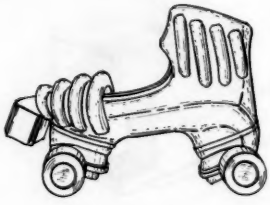
260,158
TOY CRANE TRUCK
Jack L. Breneman, Orchard Park, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.
Filed Oct. 19, 1978, Ser. No. 952,697
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—131



260,159
ROLLER SKATING FIGURINE TOY
Osamu Takahashi, Gardena, Calif., assignor to Tomy Kogyo Co., Inc., Tokyo, Japan
Filed Jan. 15, 1979, Ser. No. 3,271
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—150

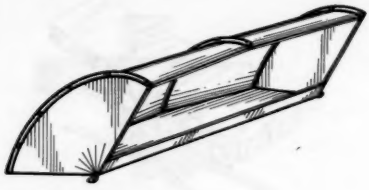
260,160
PUTTER HEAD
Charles Giebel, Phoenix, Ariz.; Charles D. Rambo, Escondido, Calif., and Gary Spencer, Phoenix, Ariz., assignors to Acushnet Company, New Bedford, Mass.
Filed May 29, 1979, Ser. No. 43,351
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—217

260,161
ROLLER SKATE
Georg Spreng, Weiherstrasse 10, D-7272 Altensteig, Fed. Rep. of Germany
Filed Nov. 19, 1979, Ser. No. 95,330
Claims priority, application Fed. Rep. of Germany, May 19, 1979, 568
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—226



260,162
LIFE JACKET
Peter J. Hume, 51 Chesterton St., Johnsonville, Wellington, New Zealand
Filed Sep. 20, 1978, Ser. No. 945,174
Claims priority, application New Zealand, Mar. 31, 1978, 15422
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—238

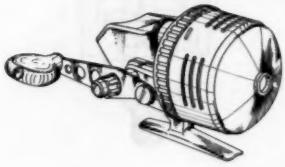
260,163
TENT
Arthur H. Stewart, Jr., 1904 S. Glendon Dr., Melbourne, Fla. 32901
Filed Sep. 12, 1978, Ser. No. 941,478
Term of patent 14 years
Int. Cl. D21—*04*
U.S. Cl. D21—253



260,164
CARTRIDGE
Terry J. Johnson, One E. Schiller, Chicago, Ill. 60611
Filed Dec. 17, 1979, Ser. No. 104,148
Term of patent 14 years
Int. Cl. D22—*03*
U.S. Cl. D22—10

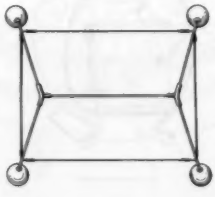
260,165
OPTICAL GUN SIGHT MOUNT
Cecil J. Ross, El Paso, Tex., assignor to W. R. Weaver Company, El Paso, Tex.
Filed Oct. 22, 1979, Ser. No. 86,918
Term of patent 14 years
Int. Cl. D22—*01*
U.S. Cl. D22—7

260,166
FISHING REEL
Seiji Myojo, Sakai, Japan, assignor to Shimano Industrial Company, Limited, Osaka, Japan
Filed Nov. 2, 1979, Ser. No. 90,625
Claims priority, application Japan, May 18, 1979, 54-20439
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—25

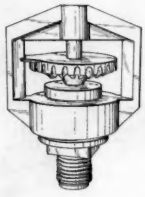


260,167
FISHING LURE
William T. Neavin, 3736 Berry Dr., Studio City, Calif. 91604
Filed Sep. 20, 1979, Ser. No. 77,385
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—28

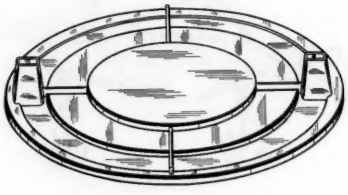
260,168
SUPPORT STRUCTURE FOR A FISH NET
Karl T. Sterner, Box 5188, S-793 00 Leksand, Sweden
Filed May 17, 1978, Ser. No. 907,273
Claims priority, application Sweden, Nov. 30, 1977, 77/2496
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—30



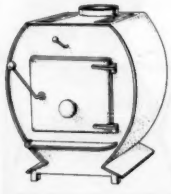
260,169
IRRIGATION SPRAY HEAD
Merle A. Vikre, 32 Windward Way, Gulf Harbors, New Port Richey, Fla. 33552
Filed Apr. 24, 1980, Ser. No. 143,412
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—35



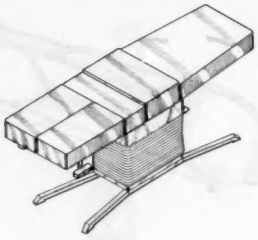
260,170
PROTECTIVE COVER FOR A SEWER PIPE FLANGE
Kenneth R. Cornwall, Livonia, Mich., assignor to Ken-Wall, Incorporated, Livonia, Mich.
Filed Dec. 26, 1978, Ser. No. 973,379
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—41



260,171
WOOD STOVE
Francois Fluttaz, 5365, 10e Ave., Rosemont, Quebec, Canada (H1X 2Z6)
Filed May 21, 1979, Ser. No. 41,047
Claims priority, application Canada, Apr. 9, 1979, 0904795
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—97

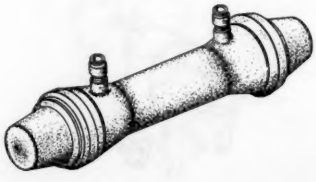


260,172
OSTEOPATHIC EXAMINING TABLE
Virgil D. Kyle, 307 Pebblebrook, Arlington, Tex. 76014
Filed Nov. 24, 1978, Ser. No. 963,505
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D24—3

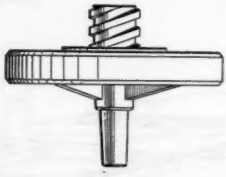


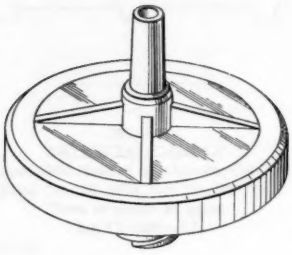
260,173
ELECTROCARDIOGRAPH
Walter W. Wiebe, Brewster, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Oct. 13, 1978, Ser. No. 951,217
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—17

260,174
HOLLOW FIBER ARTIFICIAL KIDNEY
Zane H. Geel, Concord, Calif., assignor to Cordis Dow Corp., Miami, Fla.
Filed May 14, 1979, Ser. No. 39,044
Term of patent 14 years
Int. Cl. D24—*01*
U.S. Cl. D24—21

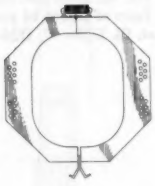


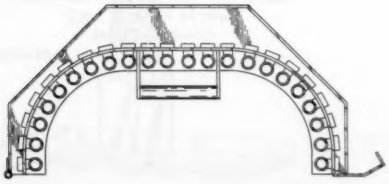
260,175
FLUID FILTER UNIT
Wolfgang Hein, Dassel, and Peter Grundmann, Bockeroth, both of Fed. Rep. of Germany, assignors to Carl Schleicher & Schull GmbH & Co., KG, Einbeck, Fed. Rep. of Germany
Filed May 24, 1979, Ser. No. 42,204
Term of patent 14 years
Int. Cl. D24—*02;* D23—*99*
U.S. Cl. D24—21





260,176
PHOTOTHERAPY CABINET
Armando Boschetti, and David W. Swanson, both of Bryan, Ohio, assignors to Paul B. Elder Company, Bryan, Ohio
Filed May 12, 1980, Ser. No. 149,039
Term of patent 14 years
Int. Cl. D24—*01*
U.S. Cl. D24—39

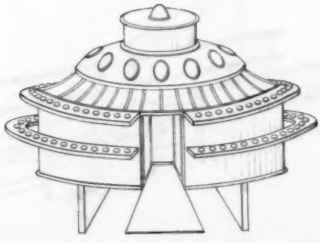




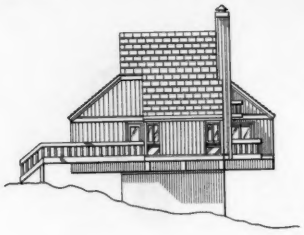
260,177
WOUND DRAINAGE BOTTLE
Patricia E. Duncan, Bayport, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Feb. 5, 1979, Ser. No. 9,641
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—54

260,178
DISPENSING CONTAINER FOR PHARMACEUTICAL DILUENTS OR THE LIKE
Louis T. Pagels, Hanover Park, Ill., assignor to Automatic Liquid Packaging, Inc., Arlington Heights, Ill.
Filed Sep. 21, 1978, Ser. No. 944,343
Term of patent 14 years
Int. Cl. D24—*99*
U.S. Cl. D24—63

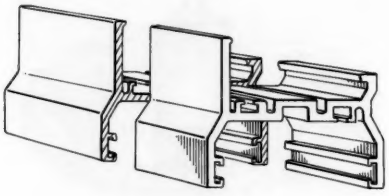
260,179
THEATER BUILDING
Robert L. Buck, 2701 Chantilly Pl., Greensboro, N.C. 27407
Filed Oct. 15, 1979, Ser. No. 84,810
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D25—11



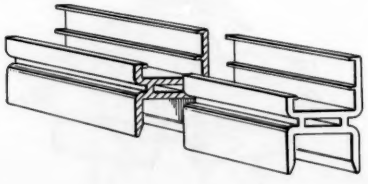
260,180
CANTILEVERED PEDESTAL HOUSE
Bertram Zusman, 4112 Montecello Blvd., Youngstown, Ohio 44505
Filed Sep. 10, 1979, Ser. No. 73,738
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D25—17



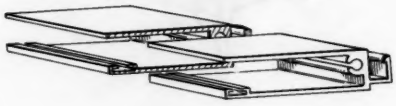
260,181
WINDOW COMPONENT EXTRUSION
Raymond Dallaire, P.O. Box 220, Levis, Quebec, Canada
Filed Sep. 14, 1978, Ser. No. 942,391
Claims priority, application Canada, Mar. 17, 1978, 1703782
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—74



260,182
WINDOW COMPONENT EXTRUSION
Raymond Dallaire, P.O. Box 220, Levis, Quebec, Canada
Filed Sep. 14, 1978, Ser. No. 942,752
Claims priority, application Canada, Mar. 17, 1978, 17037814
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—74

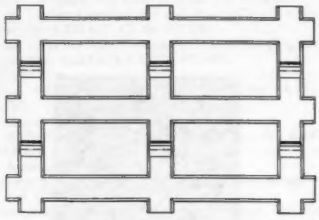


260,183
WINDOW COMPONENT EXTRUSION
Raymond Dallaire, P.O. Box 220, Levis, Quebec, Canada
Filed Sep. 14, 1978, Ser. No. 942,754
Claims priority, application Canada, Mar. 17, 1978, 17037810
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—74



260,184
UTILITY POLE
William J. Whatley, 1300 Greenmeadow La,, Littleton, Colo. 80121
Filed Jul. 26, 1979, Ser. No. 61,235
Term of patent 14 years
Int. Cl. D25—*01;* D26—*03*
U.S. Cl. D25—77

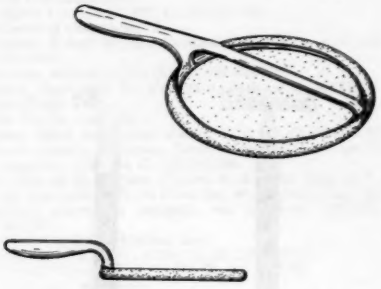
260,185
PAVING BLOCK
Geoffrey A. Griffiths, Melton Mowbray, England, assignor to Mono Concrete Limited, Surrey, England
Filed Nov. 28, 1978, Ser. No. 964,179
Claims priority, application United Kingdom, Jun. 16, 1978, 985062/78
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—91



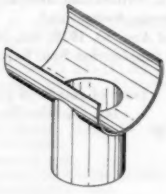
260,186
ARTIFICIAL CANDLE
Darrell L. Busse, 1990 Newark St., Aurora, Colo. 80010
Filed Oct. 10, 1978, Ser. No. 949,505
Term of patent 14 years
Int. Cl. D26—*02*
U.S. Cl. D26—11

260,187
LIGHT FIXTURE HOUSING
Lars Andersson, Halmstad, Sweden, assignor to HAFA Fabriks AB, Halmstad, Sweden
Filed Nov. 29, 1978, Ser. No. 964,588
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D26—85

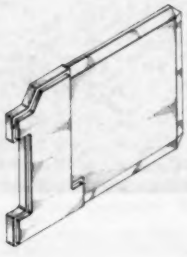
260,188
HAIR ARRANGER
Harvey L. Boykin, Jr., P.O. Box 8743, Dallas, Tex. 75216
Filed Apr. 16, 1979, Ser. No. 30,429
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—10



260,189
HAIR DRYER ATTACHMENT
Frederic V. Winkler, 14713 Waterway Dr., Rockville, Md. 20853
Filed Apr. 6, 1978, Ser. No. 893,971
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—18

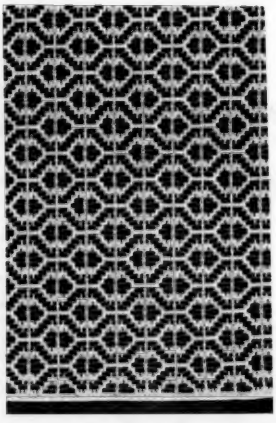


260,190
COMBINED COMB AND CASE
Loyal E. Williams, 20817 SW. Alexander, Aloha, Oreg. 97005
Filed Sep. 4, 1979, Ser. No. 72,339
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—22

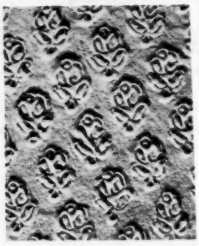


260,191
DISPOSABLE RAZOR
David O. Chase, Skaneateles, N.Y., and Clemens A. Iten, Staunton, Va., assignors to American Safety Razor Company, Verona, Va.
Filed May 9, 1979, Ser. No. 37,577
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—46

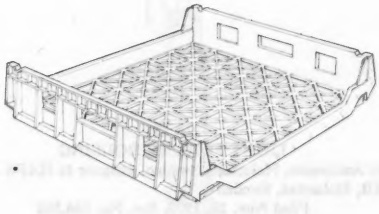
260,192
CURTAIN MATERIAL
Hans Stöcker, Wil, Switzerland, assignor to Gardisette International AG, Lucerne, Switzerland
Filed Aug. 30, 1979, Ser. No. 71,398
Claims priority, application Fed. Rep. of Germany, Mar. 20, 1979, 305
Term of patent 14 years
Int. Cl. D5—*05*
U.S. Cl. D47—6 E



260,193
EMBOSSED BATHROOM TISSUE SHEET
Frank Elchook, Jr., Whitehall, Pa., and Galyn A. Schulz, Appleton, Wis., assignors to American Can Company, Greenwich, Conn.
Filed Jan. 8, 1979, Ser. No. 1,760
Term of patent 14 years
Int. Cl. D5—*06*
U.S. Cl. D59—2 B



260,194
BAKERY TRAY OR SIMILAR ARTICLE
James C. Carroll, and Lewis T. Johnson, both of Hopkinsville, Ky., assignors to Phillips Petroleum Company, Bartlesville, Okla.
Continuation of Ser. No. 825,810, Aug. 18, 1977, abandoned.
This application Jul. 31, 1979, Ser. No. 62,855
Term of patent 14 years
Int. Cl. D99—*00*
U.S. Cl. D99—44



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 11TH DAY OF AUGUST, 1981

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A/S Plovfabrikken Fraugde: *See—*
Pedersen, Jens S., 4,283,071, Cl. 280-415.00A.

Abbott Laboratories: *See—*
Rosenbrook, William, Jr., 4,283,529, Cl. 536-17.00R.

Abe, Yoichi, to Toybox Corporation; and Wamy Corporation. Ambulatory worker toy. 4,282,677, Cl. 46-118.000.

Abe, Yoshiaki, to Diesel Kiki Company, Ltd. Glow plug temperature control apparatus. 4,283,619, Cl. 219-492.000.

Abeta, Sadaharu: *See—*
Nakatsuka, Kiyoharu; and Abeta, Sadaharu, 4,283,195, Cl. 8-524.000.

Abex Corporation: *See—*
Thiele, Arthur M.; and Fabert, Herman A., Jr., 4,282,664, Cl. 37-118.00R.

Abhiraman, Agaram S.: *See—*
Capps, Spencer W.; Hagler, Gerald E.; and Abhiraman, Agaram S., 4,283,364, Cl. 264-176.00F.

Abrahami, Shoshana, to Ziklag Reinforced Plastics, Ltd. Light-transmitting roofing and cladding panel. 4,283,451, Cl. 428-182.000.

Abrahamson, Carl-Hugo; and Heed, Bjorn. Solution-concentrating apparatus. 4,283,250, Cl. 159-9.00R.

ACF Industries, Inc.: *See—*
Basch, Walter E.; and Haney, John W., 4,282,801, Cl. 92-102.000.

Adam, John D., to Westinghouse Electric Corp. Magnetostatic wave signal-to-noise-enhancer. 4,283,692, Cl. 333-17.00L.

Adams, Frederick J., to Cam Gears Limited. Steering gear and method of assembling such gear. 4,282,770, Cl. 74-498.000.

Adams, Robert T.; Ahrens, Paul E.; and Granlund, John, to International Telephone and Telegraph Corporation. Cryptographically secure communication system. 4,283,602, Cl. 179-1.50R.

Aebi, Rudolf: *See—*
Vogel, Christian; and Aebi, Rudolf, 4,283,221, Cl. 71-118.000.

af Ekenstam, Bo T.; and Nordqvist, Erik G. P., to Landstingens Inkopscentral. Method for discharge of quantities of fluid or semi-fluid substances from a container. 4,282,986, Cl. 222-1.000.

Agency of Industrial Science & Technology: *See—*
Kawabata, Yasujiro; and Ogata, Ikuei, 4,283,563, Cl. 568-454.000.

Agfa-Gevaert AG: *See—*
Engelsmann, Dieter; Lermann, Peter; Nicko, Reinhard; Schultes, Herbert; and Wagner, Karl, 4,283,132, Cl. 354-202.000.

AGFA-Gevaert Aktiengesellschaft: *See—*
Zangenfeind, Helmut, 4,282,997, Cl. 226-91.000.

Ahrens, Paul E.: *See—*
Adams, Robert T.; Ahrens, Paul E.; and Granlund, John, 4,283,602, Cl. 179-1.50R.

Ainscow, Frank; and Anwyl, Edward D., to International Business Machines Corporation. Line scan circuits for cathode ray tube displays. 4,283,662, Cl. 315-364.000.

Air Industrie: *See—*
Billard, Francois, 4,283,223, Cl. 75-25.000.

Air Preheater Company, Inc., The: *See—*
Fernando, James U. R., 4,283,208, Cl. 55-304.000.

Aisan Industry Co., Ltd.: *See—*
Arai, Hisaharu; and Kadowaki, Kunio, 4,283,356, Cl. 261-72.00R.
Minoura, Mikio, 4,282,846, Cl. 123-568.000.

Aisin Seiki Kabushiki Kaisha: *See—*
Momose, Yutaka; and Nakamura, Kazuaki, 4,282,716, Cl. 62-6.000.

Akers, Francis I.; and Maklad, Mokhtar S., to International Telephone and Telegraph Corporation. Method of fabrication of single mode optical fibers or waveguides. 4,283,213, Cl. 65-3.00A.

Akitomo, Nobuo; and Tohyama, Shigeo, to Hitachi, Ltd. Recording system with inter-line space positioning means. 4,283,732, Cl. 346-112.000.

Akiyama, Fumitake, to San-O Industrial Co., Ltd. Double tubular time-lag fuse having improved breaking capacity. 4,283,700, Cl. 337-166.000.

Akiyama, Toshiyuki: *See—*
Izumita, Morishi; Umemoto, Masuo; Sato, Kazuhiro; Akiyama, Toshiyuki; Takahashi, Kenji; and Nagahara, Shusaku, 4,283,742, Cl. 358-213.000.

Aktiebolaget Bofors: *See—*
Holm, Boris, 4,283,549, Cl. 560-50.000.

Akzona Incorporated: *See—*
Brownell, Kenneth W., Jr., 4,283,592, Cl. 174-21.00R.
Capps, Spencer W.; Hagler, Gerald E.; and Abhiraman, Agaram S., 4,283,364, Cl. 264-176.00F.
Zeilstra, Jacobus J.; de Klein, Willem J.; Bik, Joannes D.; and Vis, Jan, 4,283,314, Cl. 260-23.0AR.

Albert, Orrin W., Jr., to United States of America, Navy. In-flight hydrophone deployment system for underwater vehicles. 4,283,781, Cl. 367-131.000.

Alleghany Pharmacal: *See—*
Mathews, Larry, 4,282,877, Cl. 128-355.000.

Allied Chemical Corporation: *See—*
Marshall, Robert M.; and Dardoufas, Kimon C., 4,283,292, Cl. 252-8.800.
Novotny, Miroslav, 4,283,582, Cl. 568-902.000.
Sexton, Peter; and De Cristofaro, Nicholas J., 4,283,225, Cl. 75-170.000.

Alps Electric Co., Ltd.: *See—*
Kondo, Shiro; and Oyama, Minoru, 4,283,613, Cl. 200-340.000.
Ohtani, Takeshi; Nishimura, Susumu; Magami, Kozo; and Osada, Katsuhisa, 4,283,704, Cl. 338-138.000.

Althuis, Thomas H.; Harbert, Charles A.; Johnson, Michael R.; and Melvin, Lawrence S., Jr., to Pfizer Inc. Hydroxyalkyl and oxoalkyl substituted phenols as analgesics and sedatives. 4,283,569, Cl. 568-764.000.

Aluminum Company of America: *See—*
Bonsignore, Patrick V., 4,283,316, Cl. 260-23.0XA.
Peterson, Richard W., 4,283,148, Cl. 366-142.000.

AM International, Inc.: *See—*
Swift, William R.; Herrod, Don W.; and Marsh, James M., 4,283,136, Cl. 355-45.000.

Amada Company, Limited: *See—*
Kojima, Shigenori; and Koyama, Katsumi, 4,282,738, Cl. 72-389.000.

Amax Inc.: *See—*
Coale, Robert D.; Sarbutt, Keith W.; and Smith, Derrick B., 4,283,017, Cl. 241-24.000.

Amberg, Eduard. Liner for trousers or skirt. 4,282,608, Cl. 2-227.000.

Amco Standards International: *See—*
Patterson, James A., 4,283,143, Cl. 356-336.000.

Amerace Corporation: *See—*
Trimmer, Paul A., 4,282,913, Cl. 411-303.000.

American Can Company: *See—*
Meyers, George L., 4,283,001, Cl. 229-37.00R.

American Cyanamid: *See—*
Floyd, Middleton B., Jr., 4,283,550, Cl. 560-53.000.

American Cyanamid Company: *See—*
Tomcufcik, Andrew S.; Wright, William B., Jr.; and Marsico, Joseph W., Jr., 4,283,334, Cl. 260-245.500.
Young, Chi C.; and DeMaria, Francesco, 4,283,365, Cl. 264-206.000.

American Hoechst Corporation: *See—*
Wenghoefer, Johann; Messier, Dennis G.; and Thompson, James E., 4,283,196, Cl. 8-531.000.

American Optical Corporation: *See—*
Swope, C. Hermas, 4,283,139, Cl. 356-125.000.

American Petroscience Corporation: *See—*
Lamel, Arthur E., 4,283,779, Cl. 367-82.000.

American Screen Printing Equipment Company: *See—*
Lala, Louis A., 4,282,805, Cl. 101-38.00R.
Lala, Louis A., 4,282,806, Cl. 101-38.00R.

AMP Incorporated: *See—*
Bunnell, Edward D., 4,283,106, Cl. 339-125.00R.
Ferrill, Jess B.; Hughes, Richard L.; and Soderstrom, Melvin A., 4,283,105, Cl. 339-97.00R.

Amsted-Siemag Kette GmbH: *See—*
Janzen, Wolfgang; and Frenker-Hackfort, Ludger, 4,283,183, Cl. 474-162.000.

Anceschi, Italo: *See—*
Schurings, Willy; Anceschi, Italo; and Reinert, Gerhard, 4,283,197, Cl. 8-638.000.

Anderson-Cook, Inc.: *See—*
Jungesjo, Harald N., 4,282,782, Cl. 76-107.00R.

Anderson, George R.: *See—*
Winters, William C.; Chang, Hsien-Hsin; Anderson, George R.; Easter, Ross A.; and Sholl, Jeffrey J., 4,283,427, Cl. 426-107.000.

Anderson, J. Hilbert, to Sea Solar Power. Boiler structure embodying a plurality of heat exchange units. 4,282,834, Cl. 122-367.00C.

Anderson, Raymond R. Rock picker. 4,282,932, Cl. 171-63.000.

Andreades, Sam; Beske, Grant A.; and Lott, John W., to Du Pont de Nemours, E. I., and Company. Use of photosensitive stratum to create through-hole connections in circuit boards. 4,283,243, Cl. 156-237.000.

Andress, Harry J.: *See—*
Schick, John W.; Davis, Robert H.; and Andress, Harry J., 4,283,293, Cl. 252-32.000.

Andrews, Ronald A., to Xerox Corporation. Development system. 4,282,827, Cl. 118-648.000.

Andro, Jean; Bessouat, Roger; Cerdan, Jean-Pierre; and Talleu, Patrick, to Stein Industrie; and Electricite de France. Component for de-spin-

ning a flow of dry vapor or gas and liquid and for separating the liquid from the vapor or gas. 4,283,206, Cl. 55-187.000.

Angle, William M. Corrugated pipe fabricator and installer device and methods of making and using the same. 4,283,160, Cl. 405-156.000.

Anosov, Oleg V.; Mirzoev, Alexandr G.; and Obraztsov, Jury V., to Lackenbach, Lilling & Siegel. High voltage conductor terminal. 4,283,595, Cl. 174-73.00R.

Anthony, Charles; and Portz, Charles A., to Rite-Hite Corporation. Releasable locking device. 4,282,621, Cl. 14-71.100.

Anthony, Walter, to GTE Sylvania Wiring Devices Inc. Lampholder having terminals of the insulation-displaying type. 4,283,107, Cl. 339-147.00R.

Antoku, Mitugu; and Saito, Fumio, to Nissan Motor Company, Limited. Control for supercharger turbines. 4,282,713, Cl. 60-600.000.

Antonini, Joseph: *See*—
Staab, Thomas E.; and Antonini, Joseph, 4,283,064, Cl. 277-81.00R.

Antonious, Anthony J. Heel restraint with an adjustable and flexible closure assembly for shoes. 4,282,657, Cl. 36-50.000.

Anwyl, Edward D.: *See*—
Ainscow, Frank; and Anwyl, Edward D., 4,283,662, Cl. 315-364.000.

Aomura, Kunio, to Nippon Electric Co., Ltd. Semiconductor integrated circuit device including element for monitoring characteristics of the device. 4,283,733, Cl. 357-68.000.

Aono, Toshiaki; and Hirose, Takeshi, to Fuji Photo Film Co., Ltd. Silver halide color photographic light-sensitive material. 4,283,486, Cl. 430-505.000.

Aoyama, Kazuho: *See*—
Omika, Hiroyoshi; Hara, Hajime; Otsuki, Yutaka; Araki, Yoshihiko; and Aoyama, Kazuho, 4,283,313, Cl. 260-18.0EP.

Aoyama, Tohru: *See*—
Obayashi, Nobuharu; Hashizume, Hikaru; Kameyama, Seiji; Ezawa, Sadaaki; Kondo, Tatsunori; Takauji, Kiyomi; and Aoyama, Tohru, 4,282,785, Cl. 84-1.010.

Arai, Hisaharu; and Kadowaki, Kunio, to Aisan Industry Co., Ltd. Carburetor for internal combustion engines. 4,283,356, Cl. 261-72.00R.

Araki, Yoshihiko: *See*—
Omika, Hiroyoshi; Hara, Hajime; Otsuki, Yutaka; Araki, Yoshihiko; and Aoyama, Kazuho, 4,283,313, Cl. 260-18.0EP.

Arco Industries, Ltd.: *See*—
Tsui, Kwok W., 4,282,678, Cl. 46-175.00R.

ARES, Inc.: *See*—
Stoner, Eugene M.; and Gillum, Richard R., 4,282,796, Cl. 89-198.000.

Arlt, Dieter: *See*—
Jautelat, Manfred; and Arlt, Dieter, 4,283,544, Cl. 548-216.000.

Armond, John W.: *See*—
Graham, David J.; and Armond, John W., 4,283,212, Cl. 62-18.000.

Armstrong, George H.; Gerkin, Richard M.; and Critchfield, Frank E., to Union Carbide Corporation. Polymer/polyisocyanates. 4,283,500, Cl. 521-137.000.

Arnold, Dan M.: *See*—
Pitts, Robert W., Jr.; Arnold, Dan M.; and Paap, Hans J., 4,282,760, Cl. 73-861.020.

Arzi, Amatzia; and Chiel, David, to Arzi, Amatzia; and Metal Works Ramat David. Method and apparatus for irrigation of fields by means of flexible hoses. 4,283,010, Cl. 239-1.000.

Asada, Atsushi, to Sharp Kabushiki Kaisha. Time information print out at a preselected condition in an electronic calculator. 4,283,769, Cl. 364-710.000.

Asahi Glass Company, Ltd.: *See*—
Henmi, Ichiro; Noda, Akinori; and Ono, Takuro, 4,283,360, Cl. 264-63.000.

Asai, Akira: *See*—
Hanazono, Masami; Watanabe, Tomoyoshi; Nakai, Toshio; Kuzuya, Susumu; Asai, Akira; Iwase, Takayuki; Nakamura, Kazuo; and Onoda, Hiroshi, 4,283,150, Cl. 400-666.000.

Asano, Noriyuki: *See*—
Tsunekawa, Tokuichi; Masunaga, Makoto; Hosoe, Kazuya; Niwa, Yukichi; Owada, Mitsutoshi; and Asano, Noriyuki, 4,283,137, Cl. 356-4.000.

ASEA Aktiebolag: *See*—
Syvakari, Pertti, 4,283,172, Cl. 432-247.000.

Asfandiyarov, Khalim A.: *See*—
Tabakov, Vladimir P.; Kornev, Boris P.; Buchenkov, Leonid N.; Gorbunov, Andrei T.; Kaschavtsev, Vladilen E.; Pilatovsky, Viktor P.; Gurov, Evgeny I.; Obrezkov, Alexandr I.; Vakhitov, Gadel G.; Bulgakov, Rishad T.; Maximov, Vladimir P.; Maxutov, Rafkhat A.; Shnirelman, Alexandr I.; Dobroskok, Boris E.; Asfandiyarov, Khalim A.; and Fatkullin, Airat K., deceased, 4,283,088, Cl. 299-2.000.

Ashauer, Karl; and Blumenstein, Fritz, to Volkswagenwerk Aktiengesellschaft. Angle gear for vehicle steering mechanism. 4,282,765, Cl. 74-417.000.

Ashiwa, Jun: *See*—
Masuda, Yoshio; Fukasawa, Atsushi; Ashiwa, Jun; and Sato, Takuro, 4,283,697, Cl. 333-202.000.

Aspro, Inc.: *See*—
St. John, Richard C., 4,282,962, Cl. 192-105.0CD.

Associated Metals & Minerals Corporation: *See*—
King, Thomas C., 4,283,625, Cl. 250-272.000.

Atalla, Martin M., to Atalla Technovations. Method and apparatus for securing data transmissions. 4,283,599, Cl. 178-22.100.

Atalla Technovations: *See*—
Atalla, Martin M., 4,283,599, Cl. 178-22.100.

Atsumi, Toshio; Takebayashi, Yoshiaki; and Okajima, Hideki, to Sumitomo Chemical Company, Limited; and Kao Soap Company, Limited. 3-Amino-4-homoisotwistane derivatives. 4,283,422, Cl. 424-325.000.

Atwood Vacuum Machine Company: *See*—
Gostomski, John J.; Gostomski, Arnold R.; and Dauel, Eugene F., 4,283,073, Cl. 280-508.000.

Austin, George O., to Austin, Wilma D. Spare tire bracket lock for pick-up trucks and like vehicles. 4,282,995, Cl. 224-42.230.

Austin, Wilma D.: *See*—
Austin, George O., 4,282,995, Cl. 224-42.230.

Auto Fire Corporation: *See*—
Byars, Garner B., 4,282,854, Cl. 126-25.00B.

Autoelektronik AG: *See*—
Diener, Rudolf, 4,283,358, Cl. 261-88.000.

Automotive Products Limited: *See*—
Young, Alastair J.; and Burke, John P., 4,282,800, Cl. 92-37.000.

Autovox S.p.A.: *See*—
Pera, Vittorio, 4,283,746, Cl. 360-96.400.

Avant, William W., to Garrett Corporation, The. Control system and method for a pressure responsive fuel regulator. 4,282,710, Cl. 60-39.28R.

Avco Everett Research Laboratory, Inc.: *See*—
Daugherty, Jack D.; Kantrowitz, Arthur R.; Sutton, George W.; and Zappa, Oswald L., 4,283,686, Cl. 331-94.50G.

Avon Products, Inc.: *See*—
Duffy, John A., 4,283,324, Cl. 260-31.20N.

B-Line Systems, Inc.: *See*—
Kowalski, Joseph W., 4,283,157, Cl. 403-297.000.

Bach, Hanswilhelm: *See*—
Bernhagen, Wolfgang; Bach, Hanswilhelm; Brundin, Eike; Gick, Wilhelm; Springer, Helmut; and Hack, Adolf, 4,283,564, Cl. 568-461.000.

Bacha, F. Timothy, to Carrier Corporation. Gas metal arc welding method for preparing misaligned tube holes. 4,283,616, Cl. 219-76.140.

Bakuniak, Edmund: *See*—
Witek, Stanislaw; Grobelny, Damian; Ptaszkowska, Janina; Bielecki, Andrzej; Bakuniak, Edmund; Fulde, Stefan; and Gorska-Poczopko, Jadwiga, 4,283,399, Cl. 424-248.400.

Ballas, George C., Sr., to Emerson Electric Co. Apparatus for cutting vegetation. 4,282,652, Cl. 30-276.000.

Bally Manufacturing Corporation: *See*—
Burnside, Walter M., 4,282,892, Cl. 133-1.00R.

Balmer, Alden M., to Honeywell Inc. Load demand control system. 4,283,635, Cl. 307-35.000.

Baltimore Aircoil Co., Inc.: *See*—
Richards, Edward G., 4,283,612, Cl. 200-334.000.

Bankes, Kristen E.; Johnson, Anderson F., Jr.; Large, Donald M.; and Reinhard, Fred J., to Western Electric Co., Inc. Transferring and transporting elongated magnetic articles for treatment such as lead straightening. 4,282,908, Cl. 140-147.000.

Barlow, Gordon A.: *See*—
Karlin, Richard A.; Barlow, Gordon A.; and Krutsch, John R., 4,283,049, Cl. 273-38.000.

Barlow, Roland J.; and Keem, David L., to Ex-Cell-O Corporation. Control valve unit for hydraulic linear actuator. 4,282,798, Cl. 91-358.00R.

Barone, Bruno J.; and Click, Gaylon T., to Denka Chemical Corporation. Catalyst structure for the partial oxidation of n-butane to produce maleic anhydride. 4,283,307, Cl. 252-432.000.

Bartholl, Klaus. Non-woven organic mulch blanket with polyvinylacetate copolymer binder. 4,283,445, Cl. 428-17.000.

Bartlett, Homer E., to Harris Corporation. Five-horn cassegrain antenna. 4,283,728, Cl. 343-781.0CA.

Bartley, Francis A., to Paccar Inc. Wheel assembly. 4,282,952, Cl. 188-18.00A.

Basch, Walter E.; and Haney, John W., to ACF Industries, Inc. Crashworthy fuel pump. 4,282,801, Cl. 92-102.000.

BASF Aktiengesellschaft: *See*—
Goetz, Norbert; and Hupfer, Leopold, 4,283,534, Cl. 544-174.000.
Schirmer, Ulrich; Becker, Rainer; and Wuerzer, Bruno, 4,283,547, Cl. 548-307.000.

Bassan, Benjamin; and Grandinetti, Michael A., to Varian Associates, Inc. Cooling structure for an oil sealed rotary vacuum pump. 4,283,167, Cl. 418-13.000.

Bassett, J. Thomas: *See*—
Wingerter, Conrad C.; and Bassett. J. Thomas, 4,283,188, Cl. 493-89.000.

Bates, Erwin F.; and Snyder, Michael D., to Universal Instruments Corporation. Feeding and orienting device. 4,282,965, Cl. 198-380.000.

Bates, Erwin F.; and Snyder, Michael D., to Universal Instruments Corporation. Feeding and orienting device. 4,282,966, Cl. 198-382.000.

Battershill, Ronald. Rigid collapsible boat. 4,282,616, Cl. 9-2.00C.

Battle Creek Equipment Co.: *See*—
Doty, Wendell E., 4,283,661, Cl. 315-360.000.

Bauditz, Reinwalt: *See*—
von Bittera, Miklos; Voege, Herbert; and Bauditz, Reinwalt, 4,283,400, Cl. 424-250.000.

Bauer, Fritz, to Suspa Federungstechnik, Fritz Bauer & Sohne oHG. Apparatus for securing chair or table columns to the underside of chair seats, table tops or the like. 4,283,033, Cl. 248-188.000.

Bauer, William A.; Frohlich, Charles R., Jr.; Griffin, Raymond H.; and Henderson, Joseph G., to Western Electric Co., Inc. Electronic

control system for reciprocating mechanism. 4,283,020, Cl. 242-25.00R.

Bauman, Robert A., to Colgate-Palmolive Company. N-substituted short chain carboxamides as antistatic agents for laundered fabrics. 4,283,192, Cl. 8-137.000.

Baumgartner, Hans: *See*—
Henke, Ulrich; and Baumgartner, Hans, 4,282,746, Cl. 73-114.000.

Baxter Travenol Laboratories, Inc.: *See*—
Lamadrid, Rene G., 4,283,004, Cl. 233-1.00C.
Meyst, Richard P.; and Porten, Ronald M., 4,283,289, Cl. 210-448.000.
Schnell, William J., 4,283,284, Cl. 210-321.300.
Winchell, David A., 4,282,980, Cl. 215-100.00A.

Bayer Aktiengesellschaft: *See*—
Brack, Alfred, 4,283,540, Cl. 546-165.000.
Hildebrand, Dietrich, 4,283,193, Cl. 8-400.000.
Jautelat, Manfred; and Arlt, Dieter, 4,283,544, Cl. 548-216.000.
Kramer, Wolfgang; Knops, Hans-Joachim; Buchel, Karl H.; and Brandes, Wilhelm, 4,283,406, Cl. 424-269.000.
Rottmaier, Ludwig; and Merten, Rudolf, 4,283,546, Cl. 548-264.000.
von Bittera, Miklos; Voege, Herbert; and Bauditz, Reinwalt, 4,283,400, Cl. 424-250.000.
Wagner, Kuno; Niggemann, Johannes; Findeisen, Kurt; and Scheinpflug, Hans, 4,283,219, Cl. 71-28.000.

BBC Brown, Boveri & Co. Ltd.: *See*—
Bodmer, Maurice A.; and Svoboda, Robert, 4,283,200, Cl. 23-230.00C.

Beamon, Turan M. Flashing-light belt. 4,283,756, Cl. 362-108.000.

Becker, Gert; Oesch, Johann U.; Poeselt, Horst; Tomlinson, Alan D.; and Walz, Kurt, to Lever Brothers Company. Production of detergent compositions. 4,283,299, Cl. 252-90.000.

Becker, Harry R., to Joy Manufacturing Company. Conveyor belt chain and method for its use. 4,282,971, Cl. 198-846.000.

Becker, Rainer: *See*—
Schirmer, Ulrich; Becker, Rainer; and Wuerzer, Bruno, 4,283,547, Cl. 548-307.000.

Becker, Reinhold; and Michel, Wolfgang, to Hoechst Aktiengesellschaft. Article of manufacture comprising a hollow rod of longitudinally gathered tubing with a support sheath surrounding the hollow rod, process for producing same, and use of the article in producing sausages. 4,282,904, Cl. 138-109.000.

Beckerman, Howard L.; and Trimmer, William S. N., to Singer Company, The. Display system utilizing incandescent lamp multiplexing. 4,283,659, Cl. 315-161.000.

Becton Dickinson & Company: *See*—
Haynes, John L., 4,282,902, Cl. 137-636.100.
Lynn, Robert W., 4,283,495, Cl. 435-240.000.

Beecham Group Limited: *See*—
Luk, Kong; Clayton, John P.; and Rogers, Norman H., 4,283,411, Cl. 424-283.000.
Luk, Kong; Clayton, John P.; and Rogers, Norman H., 4,283,412, Cl. 424-283.000.

Beeder, Wayne A. Board game apparatus. 4,283,059, Cl. 273-254.000.

Beigler, Myron A.; and Khoury, Amin J. Methods of preparing and using intravenous nutrient compositions. 4,282,863, Cl. 128-1.00R.

Bell & Howell Company: *See*—
Parker, Robert R., 4,283,658, Cl. 315-117.000.

Bell Telephone Laboratories, Incorporated: *See*—
Cerbone, Ralph L., 4,283,603, Cl. 179-18.0FA.
Nelson, Terence J., 4,283,776, Cl. 365-36.000.
Sparber, Richard G., 4,283,675, Cl. 324-57.00R.
Steinberger, Michael L., 4,283,795, Cl. 455-283.000.

Belletire, John L.; and Sarges, Reinhard, to Pfizer Inc. Imidazolone derivatives. 4,283,409, Cl. 424-273.00R.

Bellus, Daniel: *See*—
Zweifel, Hans; and Bellus, Daniel, 4,283,509, Cl. 525-375.000.

Bendix Corporation, The: *See*—
Deem, Brian C., 4,283,009, Cl. 236-86.000.

Benjamin, Jack W.: *See*—
Hirshaut, Yashar, 4,283,497, Cl. 435-289.000.

Bennett, Robert A. Dust cover for lock. 4,282,732, Cl. 70-455.000.

Bennick, Edward T., Jr., to Quality Craft, Inc. Camera for recording the output of an instrument. 4,283,129, Cl. 354-81.000.

Benoit, Horst A. Bottle labelling apparatus. 4,283,245, Cl. 156-476.000.

Beretta, Pier C., to Fabbrica d'Armi Pietro Beretta S.p.A. Safety for an automatic pistol. 4,282,795, Cl. 89-148.000.

Berfi S.p.A.: *See*—
Fiocchi, Guilio, 4,282,714, Cl. 60-632.000.

Berg, Winfred M., to Winfred M. Berg, Inc. Non-metallic silent chain. 4,283,184, Cl. 474-203.000.

Bernacki, Stephen E.: *See*—
Raffai, Jack I.; and Bernacki, Stephen E., 4,283,235, Cl. 148-175.000.

Bernhagen, Wolfgang; Bach, Hanswilhelm; Brundin, Eike; Gick, Wilhelm; Springer, Helmut; and Hack, Adolf, to Ruhrchemie AG. Process for preparing methacrolein. 4,283,564, Cl. 568-461.000.

Bernhard, Robert J.: *See*—
Lloyd, Wayne B.; Bernhard, Robert J.; Logan, Dale R.; and Minarik, Ronald W., 4,283,688, Cl. 331-94.50D.

Bernhardt, Gunther; and Daum, Gerhard, to Dynamit Nobel AG. Process for preparing benzylalcohols. 4,283,565, Cl. 568-648.000.

Berry, Howard S.: *See*—
Parker, Herman; Walker, Leon; and Berry, Howard S., 4,283,053, Cl. 273-86.00D.

Bertelsen, William R. Air suspension system for vehicle track. 4,283,094, Cl. 305-16.000.

Berthet, Jeanne; and Gaussens, Gilbert, to Commissariat a l'Energie Atomique. Hydrophobic substrate which is able to release a chemical substance. 4,283,325, Cl. 260-37.00M.

Bertus, Brent J.: *See*—
McKay, Dwight L.; and Bertus, Brent J., 4,283,274, Cl. 208-120.000.

Beske, Grant A.: *See*—
Andreades, Sam; Beske, Grant A.; and Lott, John W., 4,283,243, Cl. 156-237.000.

Bessey, Robert L., to Grand Rapids Spring Service Co. Suspension modifying device for leaf spring suspensions. 4,282,945, Cl. 180-71.000.

Bessouat, Roger: *See*—
Andro, Jean; Bessouat, Roger; Cerdan, Jean-Pierre; and Talleu, Patrick, 4,283,206, Cl. 55-187.000.

Best, Ijsbrand, to Wessanen Nederland B.V. Process and apparatus for use in treating materials in hydrocyclones. 4,283,232, Cl. 127-71.000.

Bethlehem Steel Corporation: *See*—
Bobb, Frank P., 4,283,030, Cl. 246-468.000.

Bezzerides, Paul A. Guidance system for agricultural implements. 4,282,934, Cl. 172-26.000.

BFG Glassgroup: *See*—
Stehl, Otto; and Spakowski, Hans, 4,282,856, Cl. 126-417.000.

Bickley, Robert H.; and Genrich, Thad J., to Motorola Inc. Apparatus and method for providing digital and/or bar graph displays of measured quantities. 4,283,723, Cl. 340-722.000.

Bielecki, Andrzej: *See*—
Witek, Stanislaw; Grobelny, Damian; Ptaszkowska, Janina; Bielecki, Andrzej; Bakuniak, Edmund; Fulde, Stefan; and Gorska-Poczopko, Jadwiga, 4,283,399, Cl. 424-248.400.

Bik, Joannes D.: *See*—
Zeilstra, Jacobus J.; de Klein, Willem J.; Bik, Joannes D.; and Vis, Jan, 4,283,314, Cl. 260-23.0AR.

Bilger, Gerhard; Hewig, Gert; Pfisterer, Fritz; and Schock, Hans-Werner, to Bloss, Werner H. Method for production of solar cells and solar cells produced thereby. 4,283,590, Cl. 136-251.000.

Billard, Francois, to Air Industrie. Process for treating smoke from steel plants. 4,283,223, Cl. 75-25.000.

Billig, Ernst; and Bunning, Donald L., to Union Carbide Corporation. Hydroformylation process using stable rhodium catalyst. 4,283,562, Cl. 568-454.000.

Binau, Douglas E.; and Speicher, Emmett J., to Du Pont de Nemours, E. I., and Company. Methylamines purification by distillation and purge. 4,283,254, Cl. 203-4.000.

Bindman, Stanley, to Business Concepts Marketing Corporation. Telephone display device. 4,283,037, Cl. 248-441.00B.

Bingham, Mary E.: *See*—
Phillips, Kenneth G.; and Bingham, Mary E., 4,283,507, Cl. 525-344.000.

Binkowski, Constance J., to Verbatim Corporation. Package for flexible magnetic media and method therefor. 4,282,973, Cl. 206-444.000.

Bio-Rad Laboratories, Inc.: *See*—
Langham, Maurice E., 4,282,882, Cl. 128-676.000.

Birkmeyer, William J., to PPG Industries, Inc. Beverage containers coated with a water-based liner. 4,283,428, Cl. 426-131.000.

Birney, Sharon R.: *See*—
Yuan, Mary W.; and Birney, Sharon R., 4,283,425, Cl. 426-102.000.

Bisping, Hans-Jurgen. Electrode for implantation in the heart. 4,282,885, Cl. 128-785.000.

Bissell, Inc.: *See*—
Rosendall, Henry J.; and Shaffer, Arlan J., 4,282,622, Cl. 15-41.00R.

Bittner, Joseph E.: *See*—
Szydlowski, Donald F.; Kuzminskas, Vaidotas; and Bittner, Joseph E., 4,282,832, Cl. 122-28.000.

Black, Thomas C., to J. P. Stevens & Co., Inc. Narrow elastic fabric. 4,282,906, Cl. 139-422.000.

Black, Thomas J., Jr.: *See*—
Ryffel, Henry; and Black, Thomas J., Jr., 4,282,777, Cl. 74-804.000.

Blessing, Hubert, to Levi Strauss & Co. Facing ply separator. 4,283,047, Cl. 271-10.000.

Blevins, Anne M.: *See*—
Freedman, Betty; and Blevins, Anne M., 4,282,609, Cl. 2-239.000.

Bloch, R. Ramon: *See*—
Gordon, Joseph H.; and Bloch, R. Ramon, 4,283,657, Cl. 315-86.000.

Bloss, Werner H.: *See*—
Bilger, Gerhard; Hewig, Gert; Pfisterer, Fritz; and Schock, Hans-Werner, 4,283,590, Cl. 136-251.000.

Blount, David H. Process for the production of broken down cellulose copolymers. 4,283,311, Cl. 260-9.000.

Blue Ridge Industrial Technologies, Inc.: *See*—
Mashburn, Harry G., 4,282,736, Cl. 72-345.000.

Blumenstein, Fritz: *See*—
Ashauer, Karl; and Blumenstein, Fritz, 4,282,765, Cl. 74-417.000.

Bobb, Frank P., to Bethlehem Steel Corporation. Railway switch heel block. 4,283,030, Cl. 246-468.000.

BOC Limited: *See*—
Graham, David J.; and Armond, John W., 4,283,212, Cl. 62-18.000.

Bodmer, Maurice A.; and Svoboda, Robert, to BBC Brown, Boveri & Co. Ltd. Method and apparatus for detecting corrosion in steam turbine installations. 4,283,200, Cl. 23-230.00C.

Boebel, Manfred, to Richard Wolf GmbH. Device for obtaining tissue samples. 4,282,884, Cl. 128-751.000.

Boeing Company, The: *See*—
Church, Royce F., 4,283,707, Cl. 340-58.000.
Lauba, Andu; and Pettersen, Egil R., 4,282,900, Cl. 137-625.300.
Wilke, William H., 4,283,028, Cl. 244-54.000.

Boer, Karl W., to SES, Incorporated. Photovoltaic cell. 4,283,591, Cl. 136-256.000.

Bohnenstingl, Josef: *See*—
Koeppe, Werner; Bohnenstingl, Josef; and Mastera, Stanislaus G. J., 4,283,367, Cl. 422-159.000.

Bohr, Mark T.: *See*—
Yu, Kenneth K.; Bohr, Mark T.; and Seidenfeld, Mark B., 4,282,648, Cl. 29-571.000.

Bok, Dennis E.; Bridge, Patrick E.; Coulter, Robert W.; Denlinger, George W.; Fernalld, Clifford S., Jr.; Hill, Charlie H., Jr.; Huliba, David A.; Meckstroth, James R.; and Scranton, Robert J., to Mead Corporation, The. Ink jet printing apparatus. 4,283,731, Cl. 346-75.000.

Bolind, Michael L.: *See*—
Watkins, Kenneth R.; and Bolind, Michael L., 4,283,423, Cl. 426-69.000.

Boling, Harry O.; and Brzycki, Larry R., to Maxi-Tronic, Inc. Grain elevator controls. 4,282,967, Cl. 198-571.000.

Bon Aqua: *See*—
Zimmerman, George M., 4,283,283, Cl. 210-282.000.

Bonar, Henry B., II. Oil separator and heat exchanger for vapor compression refrigeration system. 4,282,717, Cl. 62-84.000.

Bone, David P.: *See*—
Manoski, Paula M.; and Bone, David P., 4,283,424, Cl. 426-94.000.

Bonsignore, Patrick V., to Aluminum Company of America. Surface modification of alumina hydrate with liquid fatty acids. 4,283,316, Cl. 260-23.0XA.

Booth, David L.; and Rodebaugh, Richard M., to Morton-Norwich Products, Inc. Process for preparing the compound 5-t-butyl-2-methylamino-1,3,4-triadiazole. 4,283,543, Cl. 548-138.000.

Boots Hercules Agrochemicals Co.: *See*—
Minn, James, 4,283,335, Cl. 260-326.00E.
Minn, James, 4,283,338, Cl. 260-326.00E.

Borg-Warner Corporation: *See*—
Klicker, James D., 4,283,572, Cl. 568-783.000.
Kountz, Kenneth J.; Erth, Richard A.; and Norbeck, Dean K., 4,282,718, Cl. 62-115.000.
Kountz, Kenneth J.; Erth, Richard A.; and Norbeck, Dean K., 4,282,719, Cl. 62-115.000.
Schachner, Julian, 4,282,959, Cl. 192-35.000.

Bornefeld, Horst: *See*—
Feller, Otto; Oepen, Heinz; Kuhl, Manfred; Skrobek, Alois; Bornefeld, Horst; Seiler, Hans G.; and Johann, Walter, 4,282,784, Cl. 82-19.000.

Borsuk, Leslie M., to International Telephone and Telegraph Corporation. Fiber optic connector. 4,283,125, Cl. 350-96.200.

Boudenant, Pierre; Scholl, Heinz; and Zortea, Michel, to Saint-Gobain Industries. Process for manufacture of plastic sheets. 4,283,363, Cl. 264-171.000.

Bourgela, Roger: *See*—
Zucco, Louis, 4,282,662, Cl. 37-94.000.

Bourque, Rene; and Overbaugn, Lorne S., to Gamebridge, Inc. Sports boot strap closure system. 4,282,659, Cl. 36-121.000.

Bowers Industries, Inc.: *See*—
Bowers, Richard S., Jr., 4,282,858, Cl. 126-425.000.

Bowers, Richard S., Jr., to Bowers Industries, Inc. Solar energy system and method. 4,282,858, Cl. 126-425.000.

Bowles, Louis G., Jr., to Gulf & Western Manufacturing Company. Seat construction. 4,283,046, Cl. 267-102.000.

Bowman, Jeffery B., to W. L. Gore & Associates, Inc. Composite polytetrafluoroethylene article and a process for making the same. 4,283,448, Cl. 428-36.000.

Brack, Alfred, to Bayer Aktiengesellschaft. Process for the preparation of cationic naphtholactam dyestuffs. 4,283,540, Cl. 546-165.000.

Bracke, William J. I.; and Lanza, Emmanuel, to Labofina, S.A. Process for preparing rubber reinforced styrenic resins. 4,283,506, Cl. 525-309.000.

Brady, Thomas P.; and Langer, Horst G., to Dow Chemical Company, The. Fire-retardant composition containing derivatives of polyphosphoric acid partial esters. 4,283,501, Cl. 525-2.000.

Bramow, Scott B.; Laakaniemi, Richard N.; and Wichman, Paul E., to Johnson Controls, Inc. Multiple load integrated fluid control units. 4,283,007, Cl. 236-44.00C.

Brandes, Wilhelm: *See*—
Kramer, Wolfgang; Knops, Hans-Joachim; Buchel, Karl H.; and Brandes, Wilhelm, 4,283,406, Cl. 424-269.000.

Brandt, Claude R. Method and apparatus for breaking hard snow. 4,282,666, Cl. 37-195.000.

Branstetter, Ronald L., to Deere & Company. Hydrostatic transmission control system. 4,282,711, Cl. 60-395.000.

Braun, Frank D.: *See*—
Browne, Laurence S.; Braun, Frank D.; and Witt, Walter, 4,283,173, Cl. 433-34.000.

Braun, Heinz; Kiesel, Karl; and Stotz, Wolf-Gunter, to Escher Wyss GmbH. Winder apparatus for a paper machine. 4,283,023, Cl. 242-67.10R.

Braunschweiler, H. Georg. Target having limited rotational movement upon impact. 4,283,060, Cl. 273-383.000.

Brayley, Elwin J.: *See*—
Newberry, Richard D.; and Brayley, Elwin J., 4,282,839, Cl. 123-335.000.

Break, Douglas G., to Van Mark Products Corporation. Brake for sheet metal or the like. 4,282,735, Cl. 72-319.000.

Brendamour, David A., to Cincinnati Milacron Inc. Compliant apparatus with remote smeared centers. 4,283,153, Cl. 403-53.000.

Brereton, Paul A., to Triplex Safety Glass Company Limited. Producing glass sheets of required curved shape. 4,283,216, Cl. 65-106.000.

Brett, Jack, to Duro-Test Corporation. High emissivity filament for energy conserving incandescent lamps with infrared radiation returning envelopes. 4,283,653, Cl. 313-341.000.

Bridge, Patrick E.: *See*—
Bok, Dennis E.; Bridge, Patrick E.; Coulter, Robert W.; Denlinger, George W.; Fernalld, Clifford S., Jr.; Hill, Charlie H., Jr.; Huliba, David A.; Meckstroth, James R.; and Scranton, Robert J., 4,283,731, Cl. 346-75.000.

Bridgestone Tire Co., Ltd.: *See*—
Takigawa, Hiroyoshi; Miyamura, Nobuhiro; Ogawa, Hiroshi; and Ohkuni, Shinichiro, 4,282,914, Cl. 152-209.00D.

Brightman, Ben W., to Whirlpool Corporation. Cam control mechanism. 4,283,607, Cl. 200-38.00R.

Brison, Robert J.; and Gathje, John C., to Stauffer Chemical Company. Beneficiation of trona by flotation. 4,283,277, Cl. 209-166.000.

British Broadcasting Corporation: *See*—
Chambers, John P., 4,283,787, Cl. 371-38.000.

British Leyland UK Limited: *See*—
Smith, Sydney J.; and Chambers, Peter F., 4,283,152, Cl. 403-3.000.

Britton, Rick A.: *See*—
Caldwell, Carl W.; and Britton, Rick A., 4,283,717, Cl. 340-506.000.

Britzke, Ingo; and Horn, Manfred, to Gebr. Bode & Co. Swinging door for vehicles. 4,282,686, Cl. 49-253.000.

Broger, Emil A.; Crameri, Yvo; Leuenberger, Hans G. W.; Widmer, Erich; and Zell, Reinhard, to Hoffmann-La Roche Inc. Process for the manufacture of cyclohexene derivatives. 4,283,559, Cl. 568-11.000.

Broll, Madeleine: *See*—
Pigerol, Charles; Vernieres, Jean-Claude; Eymard, Pierre; Simiand, Jacques; Broll, Madeleine; and Lacolle, Jean-Yves, 4,283,420, Cl. 424-317.000.

Bronnec, Jean A. L., to Etablissements Generaux de Mecanique de l'Ouest. Heating device. 4,283,171, Cl. 432-112.000.

Brother Kogyo Kaisha: *See*—
Hanazono, Masami; Watanabe, Tomoyoshi; Nakai, Toshio; Kuzuya, Susumu; Asai, Akira; Iwase, Takayuki; Nakamura, Kazuo; and Onoda, Hiroshi, 4,283,150, Cl. 400-666.000.

Brown, Bertrand H.: *See*—
Picard, Harrison R.; Rotondo, Claude P.; Shaffer, Harold K.; and Brown, Bertrand H., 4,283,096, Cl. 308-207.00R.

Brown, Carl E.; and Rosenberger, Edwin C., to Chem-Lawn Corporation. Tank support for a tank truck. 4,283,066, Cl. 280-5.00D.

Brown, James M.; Kaiser, Hermann; and Olson, Jerry A., to Eaton Corporation. Fluid flow meter. 4,282,751, Cl. 73-202.000.

Brown, William L. Universal golf bag. 4,282,912, Cl. 150-1.50C.

Brown Wooten Mills, Inc.: *See*—
Dunlap, Albert R.; and Nester, Dallas G., 4,282,727, Cl. 66-172.00E.

Browne, Laurence S.; Braun, Frank D.; and Witt, Walter, to Jet-Ceramic Dental GmbH & Co. KG. Device for the production of a dental working model for the preparation of prosthetic works. 4,283,173, Cl. 433-34.000.

Brownell, Kenneth W., Jr., to Akzona Incorporated. Filled electrical splice case. 4,283,592, Cl. 174-21.00R.

Brownlee Labs, Inc.: *See*—
Brownlee, Robert, 4,283,280, Cl. 210-198.200.

Brownlee, Robert, to Brownlee Labs, Inc. Cartridge type separation column and holder assembly for liquid chromatographs. 4,283,280, Cl. 210-198.200.

Brundin, Eike: *See*—
Bernhagen, Wolfgang; Bach, Hanswilhelm; Brundin, Eike; Gick, Wilhelm; Springer, Helmut; and Hack, Adolf, 4,283,564, Cl. 568-461.000.

Bruns, Klaus: *See*—
Hagen, Jens; and Bruns, Klaus, 4,283,561, Cl. 568-446.000.

Bryant, David R.; and Galley, Richard A., to Union Carbide Corporation. Process for removing triorganophosphine from a liquid composition. 4,283,304, Cl. 252-413.000.

Bryant, Melvin B.: *See*—
Parker, Eugene R., Jr.; and Bryant, Melvin B., 4,283,162, Cl. 405-244.000.

Brzycki, Larry R.: *See*—
Boling, Harry O.; and Brzycki, Larry R., 4,282,967, Cl. 198-571.000.

Buchanan, Relva C.; and Wittmer, Dale E., to University of Illinois Foundation. Low temperature densification of PZT ceramics. 4,283,228, Cl. 106-73.300.

Buchanan, Robert D., to Porritts & Spencer Inc. Papermakers wet felt with ribbed and smooth surface textures. 4,283,454, Cl. 428-233.000.

Buchel, Karl H.: *See*—
Kramer, Wolfgang; Knops, Hans-Joachim; Buchel, Karl H.; and Brandes, Wilhelm, 4,283,406, Cl. 424-269.000.

Buchenkov, Leonid N.: *See*—
Tabakov, Vladimir P.; Kornev, Boris P.; Buchenkov, Leonid N.; Gorbunov, Andrei T.; Kaschavtsev, Vladilen E.; Pilatovsky, Viktor P.; Gurov, Evgeny I.; Obrezkov, Alexandr I.; Vakhitov, Gadel G.; Bulgakov, Rishad T.; Maximov, Vladimir P.; Maxutov, Rafkhat A.; Shnirelman, Alexandr I.; Dobroskok, Boris E.; Asfandiyarov, Khalim A.; and Fatkullin, Airat K., deceased, 4,283,088, Cl. 299-2.000.

Buck, Marshall D., to Cerwin Vega, Inc. Coaxial loudspeaker system. 4,283,606, Cl. 179-115.50H.

Bulgakov, Rishad T.: *See—*
Tabakov, Vladimir P.; Kornev, Boris P.; Buchenkov, Leonid N.; Gorbunov, Andrei T.; Kaschavtsev, Vladilen E.; Pilatovsky, Viktor P.; Gurov, Evgeny I.; Obrezkov, Alexandr I.; Vakhitov, Gadel G.; Bulgakov, Rishad T.; Maximov, Vladimir P.; Maxutov, Rafkhat A.; Shnirelman, Aʟexandr I.; Dobroskok, Boris E.; Asfandiyarov, Khalim A.; and Fatkullin, Airat K., deceased, 4,283,088, Cl. 299-2.000.

Bull, David W., to Nartron Corporation. Electrical switch. 4,283,611, Cl. 200-252.000.

Bunker Ramo Corporation: *See—*
Parks, Howard L., 4,283,754, Cl. 361-382.000.

Bunnell, Edward D., to AMP Incorporated. Symmetrical connector for solar panel arrays. 4,283,106, Cl. 339-125.00R.

Bunning, Donald L.: *See—*
Billig, Ernst; and Bunning, Donald L., 4,283,562, Cl. 568-454.000.

Burgoon, John R., to Hewlett-Packard Company. Crystal oscillator having low noise signal extraction circuit. 4,283,691, Cl. 331-116.00R.

Burke, John P.: *See—*
Young, Alastair J.; and Burke, John P., 4,282,800, Cl. 92-37.000.

Burlington Industries, Inc.: *See—*
McGee, James N., 4,283,455, Cl. 428-240.000.
Teague, Edward W.; Hance, Max H.; and Neal, Carl R., 4,283,194, Cl. 8-494.000.

Burn, Ian, to Sprague Electric Company. Low firing monolithic ceramic capacitor with high dielectric constant. 4,283,753, Cl. 361-321.000.

Burnside, Walter M., to Bally Manufacturing Corporation. Paper money dispensing means. 4,282,892, Cl. 133-1.00R.

Burr, Kenneth J., to English Clays Lovering Pochin & Company Ltd. Particle size determination. 4,282,745, Cl. 73-61.400.

Burroughs Corporation: *See—*
Schwartz, Sidney J.; Quadri, Farooq M.; and Hsin, Chung-Herng, 4,283,774, Cl. 365-8.000.

Burrows, Ronald W.: *See—*
Lea, Bernard A.; and Burrows, Ronald W., 4,283,487, Cl. 430-522.000.

Burton, Thomas A., to Waters Instruments, Inc. Locker cabinet. 4,283,099, Cl. 312-351.000.

Buschow, Kurt H. J.: *See—*
van Mal, Harmannus H.; van Esveld, Hendrik A.; van Wieringen, Johannes S.; and Buschow, Kurt H. J., 4,283,226, Cl. 75-175.500.

Buser, Rudolf G.; and Insleman, Hans E., to United States of America, Army. Apparatus for the controlled discharge of a charged object. 4,283,749, Cl. 361-218.000.

Business Concepts Marketing Corporation: *See—*
Bindman, Stanley, 4,283,037, Cl. 248-441.00B.

Butler, Edward A.; and Savoie, Francis R., to Synco National Ltd. Door alarm device. 4,283,718, Cl. 340-545.000.

B.V. Scheepswerf en Reparatie bedrijf "Breebot": *See—*
Nagelkerke, Willem, 4,282,661, Cl. 37-58.000.

Byars, Garner B., to Auto Fire Corporation. Charcoal lighter. 4,282,854, Cl. 126-25.00B.

Bylinsky, Lev V.; Gavrilenko, Vladimir I.; Glumov, Ivan F.; Denisov, Vasily F.; and Meer, Vadim V. System for graphic representation of vessel's position on Mercator map. 4,283,763, Cl. 364-449.000.

Byrd, Geoffrey C. M., to Imperial Chemical Industries Limited. Expandable electrode. 4,283,265, Cl. 204-252.000.

C-R-O, Inc.: *See—*
Griebeler, Elmer L., 4,282,763, Cl. 74-89.150.

C. Stiefelmayer KG: *See—*
Reiff, Karl; Wagner, Wolfgang; and Masur, Klaus, 4,282,654, Cl. 33-1.00M.

Cabot Corporation: *See—*
Yates, Barrie J.; and Hurst, Ronald C., 4,283,378, Cl. 423-456.000.

Caldwell, Carl W.; and Britton, Rick A., to Digital Monitoring Products. Monitoring system for a direct-wire alarm system. 4,283,717, Cl. 340-506.000.

California Institute of Technology: *See—*
Schneider, Horst W., 4,282,626, Cl. 15-320.000.

Calspan Corporation: *See—*
Sterbutzel, Gerald A., 4,282,813, Cl. 102-431.000.

Cam Gears Limited: *See—*
Adams, Frederick J., 4,282,770, Cl. 74-498.000.

Campbell, Fannie L.: *See—*
Pines, Arthur N.; Johnson, Gordon C.; and Campbell, Fannie L., 4,283,519, Cl. 528-26.000.

Campbell, Gerald A.; Hollister, Kenneth R.; and Sutton, Richard C., to Eastman Kodak Company. Crosslinkable polymers containing acrylamidophenol units. 4,283,504, Cl. 525-261.000.

Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence: *See—*
Porlier, Joseph G. A., 4,282,870, Cl. 128-203.140.

Cannon, William N., to Eli Lilly and Company. Novel oxiodinium and thiaiodinium compounds. 4,283,349, Cl. 260-505.00R.

Canon Kabushiki Kaisha: *See—*
Matsumura, Isao, 4,283,124, Cl. 351-7.000.
Tsunekawa, Tokuichi; Masunaga, Makoto; Hosoe, Kazuya; Niwa, Yukichi; Owada, Mitsutoshi; and Asano, Noriyuki, 4,283,137, Cl. 356-4.000.

Canron Corp.: *See—*
von Beckmann, Helmuth, 4,282,815, Cl. 104-12.000.

Capps, Spencer W.; Hagler, Gerald E.; and Abhiraman, Agaram S., to Akzona Incorporated. Melt spinning of synthetic yarns. 4,283,364, Cl. 264-176.00F.

Carlson, Carl A. Easily mounted anti-skid tire chain. 4,282,916, Cl. 152-241.000.

Carmel Energy, Inc.: *See—*
Krajicek, Richard W., 4,282,929, Cl. 166-303.000.

Carnation Company: *See—*
Doster, Robert C.; Judson, Beth R.; and Soo Hoo, Kathleen G., 4,283,430, Cl. 426-284.000.

Carr, Albert A.; and Farr, Robert A., to Richardson-Merrell Inc. Aroylethenylpiperidinobutyrophenone antipsychotic agents. 4,283,404, Cl. 424-267.000.

Carrier Corporation: *See—*
Bacha, F. Timothy, 4,283,616, Cl. 219-76.140.

Carroll, Howard E.; and Sweitzer, Gerald M., to SCM Corporation. Semi-gloss latex paint. 4,283,320, Cl. 260-29.6RW.

Carson, William W., to Waters Associates, Inc. Spatially homogenizing optical modulator. 4,283,140, Cl. 356-130.000.

Catanzaro, James R.; Meyer, August R.; and Willis, David L., to Cincinnati Milacron Inc. Hydraulic injection molding machine stuffing box. 4,283,062, Cl. 277-12.000.

Caterpillar Tractor Co.: *See—*
Cline, Lawrence R., 4,283,093, Cl. 305-10.000.
Davidson, Harold C.; and Parks, John H., 4,282,838, Cl. 123-198.0DB.
Grawey, Charles E., 4,283,366, Cl. 264-502.000.
Harmon, James L.; and Junck, John A., 4,282,898, Cl. 137-596.130.

Cavender, Patricia: *See—*
Ganguly, Ashit K.; Girijavallabhan, Viyyoor M.; Cavender, Patricia; Sarre, Olga; and McCombie, Stuart W., 4,283,531, Cl. 544-30.000.

Cavil, David T., to Outboard Marine Corporation. DC Motor control with alternate action solenoid drive circuit. 4,283,668, Cl. 318-549.000.

Celanese Corporation: *See—*
Howell, Carl J., Jr.; Trott, David W.; and Riley, Jesse L., 4,282,890, Cl. 131-332.000.
Keith, Charles H.; and Tucker, Richard O., 4,283,186, Cl. 493-42.000.

Century Machine, Inc.: *See—*
Eddy, George R., 4,282,734, Cl. 72-54.000.

Cerbone, Ralph L., to Bell Telephone Laboratories, Incorporated. On-hook/off-hook status check circuit. 4,283,603, Cl. 179-18.0FA.

Cerdan, Jean-Pierre: *See—*
Andro, Jean; Bessouat, Roger; Cerdan, Jean-Pierre; and Talleu, Patrick, 4,283,206, Cl. 55-187.000.

Cerwin Vega, Inc.: *See—*
Buck, Marshall D., 4,283,606, Cl. 179-115.50H.

Chakrabarti, Paritosh M.; and Kirchner, Darrell G., to GAF Corporation. Alkyl aryl ethyleneoxy sulfonate surfactants for vinyl acetate polymerization. 4,283,321, Cl. 260-29.6MQ.

Chambers, Charles W., Jr., to Tellabs, Inc. Current source circuits with common mode noise rejection. 4,283,604, Cl. 179-70.000.

Chambers, John P., to British Broadcasting Corporation. Cyclic redundancy data check encoding method and apparatus. 4,283,787, Cl. 371-38.000.

Chambers, Peter F.: *See—*
Smith, Sydney J.; and Chambers, Peter F., 4,283,152, Cl. 403-3.000.

Chambu. Claude: *See—*
Voirin, Robert; Mathieu, Pierre; and Chambu, Claude, 4,283,380, Cl. 423-574.00R.

Champion International Corporation: *See—*
Lillibridge, Harold R., 4,283,003, Cl. 229-77.000.
Mode, Duane R., 4,283,002, Cl. 229-41.00R.

Chan, David C. K., to Chevron Research Company. Fungicidal, miticidal and ovicidal alkoxycarbonylalkyl-substituted and carbamylalkyl-substituted N-haloalkylthiosulfonamides. 4,283,416, Cl. 424-305.000.

Chandra, Bala P.; Greaves, Jeffrey C.; and Lovelock, Victor G., to Imperial Chemical Industries Limited. Method of treating polymerlatices. 4,283,526, Cl. 528-500.000.

Chang, Hsien-Hsin: *See—*
Winters, William C.; Chang, Hsien-Hsin; Anderson, George R.; Easter, Ross A.; and Sholl, Jeffrey J., 4,283,427, Cl. 426-107.000.

Chang, Hsu, to International Business Machines Corporation. On-chip bubble domain relational data base system. 4,283,771, Cl. 364-900.000.

Chao, Chien C.; and Sherman, John D., to Union Carbide Corporation. Bulk cyclohexanol/cyclohexanone separation by selective adsorption on zeolitic molecular sieves. 4,283,560, Cl. 568-366.000.

Charles, John J.; and Gasman, Robert C., to GAF Corporation. PBT Molding compositions containing mica and a composite polymer. 4,283,326, Cl. 260-40.00R.

Chauvin, Yves; Commereuc, Dominique; Gaillard, Jean; Leger, Gerard; and Phung, Nhu Hung, to Institut Francais du Petrole. Catalyst composition and its use for oligomerizing olefins. 4,283,305, Cl. 252-431.00C.

Cheetham, Stuart E., to GR-Stein Refractories Limited. Regenerative heat exchange systems. 4,282,923, Cl. 165-9.100.

Chem-Lawn Corporation: *See—*
Brown, Carl E.; and Rosenberger, Edwin C., 4,283,066, Cl. 280-5.00D.

Chemische Werke Huls AG: *See—*
Disteldorf, Josef; Hubel, Werner; and Wolf, Elmar, 4,283,535, Cl. 544-193.000.

Chen, Kuen-Ming. Double-volumed tape cartridge operative at two ends. 4,283,022, Cl. 242-55.19A.

Chessler, Bernard. Closure device for a dispensing container. 4,282,992, Cl. 222-538.000.
Chester, Arthur W.; and Chu, Yung F., to Mobil Oil Corporation. Manufacture of aromatic compounds. 4,283,584, Cl. 585-481.000.
Chevron Research Company: *See*—
Chan, David C. K., 4,283,416, Cl. 424-305.000.
deVries, Louis; and King, John M., 4,283,295, Cl. 252-46.400.
Rosenthal, Joel W.; and Kuehler, Christopher W., 4,283,268, Cl. 208-8.0LE.
Wilkes, John B., 4,283,581, Cl. 568-864.000.
Chiel, David: *See*—
Arzi, Amatzia; and Chiel, David, 4,283,010, Cl. 239-1.000.
Chinoin Gyogyszer es Vegyeszeti Termekek Gyara RT.: *See*—
Szabo, Tibor; Institoris, Laszlo; Kovacs, Gabor; Stadler, Istvan; and Koszegi, Bela, 4,283,413, Cl. 424-285.000.
Chisholm, John P. In-flight aircraft weather radar calibration. 4,283,725, Cl. 343-5.00W.
Chiulli, Robert D. Pan for angiographic catheters. 4,282,972, Cl. 206-303.000.
Chodorow, Ingram S.; and Hall, Richard, to Technalytics Inc. Nasogastric tube stabilizer. 4,282,871, Cl. 128-207.180.
Choinski, Edward J., to Polaroid Corporation. Method and apparatus for coating webs. 4,283,443, Cl. 427-295.000.
Choisnet, Joel, to Jaeger. Control of display devices with electromagnetic drums. 4,283,715, Cl. 340-378.100.
Chow, Wai Y.; Hurley, Daniel J.; Rea, James H.; and Thackaberry, S. Paul, to Gulf Oil Corporation. Novel acetylene end-capped polyesters. 4,283,551, Cl. 560-86.000.
Christ, Alfred; and Lehmann, Rolf, to Escher Wyss Limited. Controlled deflection roll. 4,282,638, Cl. 29-116.0AD.
Christ, Alfred; and Lehmann, Rolf, to Escher Wyss Limited. Heated controlled deflection roll. 4,282,639, Cl. 29-116.0AD.
Christian, Damon N.: *See*—
Fletcher, Robert N.; and Christian, Damon N., 4,282,665, Cl. 37-142.00A.
Chu, Yung F.: *See*—
Chester, Arthur W.; and Chu, Yung F., 4,283,584, Cl. 585-481.000.
Church, Royce F., to Boeing Company, The. Aircraft low pressure tire warning system having comparator circuit for each axle pair of a four wheel bogie configuration. 4,283,707, Cl. 340-58.000.
Ciba-Geigy Corporation: *See*—
de Sousa, Bernardo; Muntwyler, Rene; and Schmid, Werner, 4,283,444, Cl. 427-421.000.
Dexter, Martin; and Winter, Roland A. E., 4,283,327, Cl. 260-45.8NT.
Moser, Roland; and Renner, Alfred, 4,283,520, Cl. 528-93.000.
Schurings, Willy; Anceschi, Italo; and Reinert, Gerhard, 4,283,197, Cl. 8-638.000.
Seitz, Karl; and Mausezahl, Dieter, 4,283,331, Cl. 260-153.000.
Vogel, Christian; and Aebi, Rudolf, 4,283,221, Cl. 71-118.000.
Zweifel, Hans; and Bellus, Daniel, 4,283,509, Cl. 525-375.000.
Cincinnati Milacron Inc.: *See*—
Brendamour, David A., 4,283,153, Cl. 403-53.000.
Catanzaro, James R.; Meyer, August R.; and Willis, David L., 4,283,062, Cl. 277-12.000.
Cincotta, Louis; and Foley, James W., to Polaroid Corporation. Thiazine-1,1-dioxide and isothiazole-1,1-dioxide derivatives and process for preparation. 4,283,537, Cl. 546-94.000.
CIR-S.p.A. Divisione Sasib: *See*—
Pasquali, Giancarlo, 4,283,716, Cl. 340-380.000.
Citelli, Kenneth J. Multiple speed bicycle drive. 4,283,069, Cl. 280-236.000.
Citizen Watch Company Limited: *See*—
Nakajima, Fumio; Machida, Takayasu; Yamada, Kenji; and Kanno, Fumio, 4,283,783, Cl. 368-76.000.
Tamaru, Munetaka; and Natori, Minoru, 4,283,782, Cl. 368-72.000.
Clardy, Edwin K.: *See*—
DeFord, Donald D.; Clardy, Edwin K.; and Fuller, Edward N., 4,283,201, Cl. 23-230.00A.
Clarion Co., Ltd.: *See*—
Okada, Masataka, 4,283,740, Cl. 358-124.000.
Clark, Charles R.; Hanson, Lowell R.; and Steele, Gerald G., to Parker-Hannifin Corporation. Aerial refueling device. 4,282,909, Cl. 141-98.000.
Clarke, Christopher T., to Exxon Research & Engineering Co. Lubricating oil composition. 4,283,294, Cl. 252-32.70R.
Clarke, John T.: *See*—
Luck, Allan J.; Clarke, John T.; and Hoffman, Michael R., 4,283,450, Cl. 428-171.000.
Clay, Bobby J., to Natmar, Inc. Label machine. 4,282,808, Cl. 101-93.070.
Clayton, John P.: *See*—
Luk, Kong; Clayton, John P.; and Rogers, Norman H., 4,283,411, Cl. 424-283.000.
Luk, Kong; Clayton, John P.; and Rogers, Norman H., 4,283,412, Cl. 424-283.000.
Clementoni, Dominick; and Corbett, Luke W., to Exxon Research & Engineering Co. Air-treated propane-precipitated asphalt. 4,283,230, Cl. 106-274.000.
Clementoni, Dominick; and Corbett, Luke W., to Exxon Research & Engineering Company. Sulfur-treated propane-precipitated asphalt. 4,283,231, Cl. 106-274.000.
Click, Gaylon T.: *See*—
Barone, Bruno J.; and Click, Gaylon T., 4,283,307, Cl. 252-432.000.
Cline, Lawrence R., to Caterpillar Tractor Co. Track adjuster and guard. 4,283,093, Cl. 305-10.000.
Clock, Donald P.; and Easter, Finis C., to Sperry Corporation. Transistorized modulator for pulse radar. 4,283,790, Cl. 375-71.000.
Coale, Robert D.; Sarbutt, Keith W.; and Smith, Derrick B., to Amax Inc. Selective flotation of cubanite and chalcopyrite from copper/-nickel mineralized rock. 4,283,017, Cl. 241-24.000.
Coane, Philip J., to Hughes Aircraft Company. Process for forming semiconductor devices using electron-sensitive resist patterns with controlled line profiles. 4,283,483, Cl. 430-296.000.
Cobb, James R. Oil field storage tank attachment for cleaning. 4,282,624, Cl. 15-210.00B.
Cogan, Leo M., to Textile Industries, Inc. High pressure filter vessel. 4,283,281, Cl. 210-232.000.
Cohen, Joel M. Recirculationless concert hall simulation and enhancement system. 4,283,600, Cl. 179-1.00J.
Cohen, Mitchell S., to International Business Machines Corporation. Contiguous disk bubble storage. 4,283,775, Cl. 365-32.000.
Cohn, Alan R., to Grove Valve and Regulator Company. Device for detecting rate of change in pressure. 4,282,757, Cl. 73-714.000.
Coleman, Mark S.: *See*—
Zuhone, Daniel M.; and Coleman, Mark S., 4,282,936, Cl. 172-512.000.
Colgate-Palmolive Company: *See*—
Bauman, Robert A., 4,283,192, Cl. 8-137.000.
Colt Industries Operating Corp: *See*—
Miller, Robert J., 4,283,353, Cl. 261-41.00D.
Columbus, Richard L., to Eastman Kodak Company. Film pack. 4,283,134, Cl. 354-275.000.
Comer, Robert C.; and Tillotson, Henry B., to Toro Company, The. Cutting element for vegetation line trimmers. 4,282,653, Cl. 30-276.000.
Commereuc, Dominique: *See*—
Chauvin, Yves; Commereuc, Dominique; Gaillard, Jean; Leger, Gerard; and Phung, Nhu Hung, 4,283,305, Cl. 252-431.00C.
Commissariat a l'Energie Atomique: *See*—
Berthet, Jeanne; and Gaussens, Gilbert, 4,283,325, Cl. 260-37.00M.
Vertut, Jean, 4,283,165, Cl. 414-733.000.
Vrillon, Bernard, 4,283,615, Cl. 219-66.000.
Commissariat l'Energie: *See*—
Meyer, Robert, 4,283,121, Cl. 350-363.000.
Compagnie Francaise de Raffinage: *See*—
Legendre, Michel; and Engelhard, Philippe, 4,283,585, Cl. 585-482.000.
Compagnie Generale des Etablissements Michelin: *See*—
Machat, Jean-Yves, 4,283,466, Cl. 429-15.000.
Pommier, Jean, 4,282,917, Cl. 152-352.00R.
Compagnie Industrielle des Telecommunications Cit-Alcatel: *See*—
Herledan, Jean R., 4,283,720, Cl. 340-653.000.
Compudrive Corporation: *See*—
Ryffel, Henry; and Black, Thomas J., Jr., 4,282,777, Cl. 74-804.000.
Computer Operations: *See*—
Edwards, Philip K., 4,283,724, Cl. 340-731.000.
Comyns-Carr, Cecil A.; and Platts, Michael J., to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Energy in Her Britannic Majesty's Government of the. Devices for extracting energy from waves. 4,282,712, Cl. 60-500.000.
Conaway, Everett T. Poultry pinning and de-hairing machine. 4,282,632, Cl. 17-11.10R.
Concepts for Women, Inc.: *See*—
Freedman, Betty; and Blevins, Anne M., 4,282,609, Cl. 2-239.000.
Conoco, Inc.: *See*—
Leach, Bruce E., 4,283,574, Cl. 568-804.000.
Mazza, Raymond L.; Dahl, H. Douglas; and Umphrey, Ronald W., 4,283,089, Cl. 299-16.000.
Weimer, Dean R.; and Starks, Charles M., 4,283,514, Cl. 526-84.000.
Consan Pacific Incorporated: *See*—
Saurenman, Donald G., 4,282,830, Cl. 119-21.000.
Control Commerce AG: *See*—
Rethmeier, Gerhard, 4,283,149, Cl. 400-617.000.
Cook, George E.: *See*—
Merrick, George J.; Cook, George E.; and Modglin, Donald D., 4,283,617, Cl. 219-125.100.
Cools, Antoon S. P., to Sperry Corporation. Twine wrapper for round bale forming machine. 4,282,803, Cl. 100-5.000.
Cools, Antoon S. P., to Sperry Corporation. Twine wrapper for round bale forming machine. 4,282,804, Cl. 100-5.000.
Cooper, James J., Jr., to International Telephone and Telegraph Corporation. Wide-range insulating/sealing sleeve. 4,283,597, Cl. 174-138.00F.
Copenhafer, William C.: *See*—
Frint, William R.; Copenhafer, William C.; and Pinsky, Michael L., 4,283,372, Cl. 423-206.00T.
Corbett, Luke W.: *See*—
Clementoni, Dominick; and Corbett, Luke W., 4,283,230, Cl. 106-274.000.
Clementoni, Dominick; and Corbett, Luke W., 4,283,231, Cl. 106-274.000.
Corke, Nicholas T.; and Debbaut, Christian A. M., to N.V. Raychem S.A. Bracing method. 4,283,239, Cl. 156-85.000.
Corker, Frank: *See*—
Du Toit, Rudolph M., 4,282,867, Cl. 128-66.000.
Cormier, Alan D.; Webster, Milo E.; Czaban, John D.; Silverman, Neil D.; and Noble, Lynn W., to Instrumentation Laboratory Inc. Analysis system. 4,283,262, Cl. 204-195.00M.

Cornelissen, Gerardus A. P. M.: *See—*
Van Herck, Andre J. B. M.; and Cornelissen, Gerardus A. P. M., 4,283,652, Cl. 313-217.000.

Corning Glass Works: *See—*
Layton, Margaret M., 4,283,752, Cl. 361-321.000.
Staley, Warren D., 4,283,218, Cl. 65-360.000.

Coulter, Robert W.: *See—*
Bok, Dennis E.; Bridge, Patrick E.; Coulter, Robert W.; Denlinger, George W.; Fernalld, Clifford S., Jr.; Hill, Charlie H., Jr.; Huliba, David A.; Meckstroth, James R.; and Scranton, Robert J., 4,283,731, Cl. 346-75.000.

Cramer, Hans, to H. Krantz GmbH & Co. Chain guide for a stenter. 4,282,636, Cl. 26-91.000.

Crameri, Yvo: *See—*
Broger, Emil A.; Crameri, Yvo; Leuenberger, Hans G. W.; Widmer, Erich; and Zell, Reinhard, 4,283,559, Cl. 568-11.000.

Crass, Gunther: *See—*
Siefried, Walter; Janocha, Siegfried; and Crass, Gunther, 4,283,453, Cl. 428-212.000.

Crawford, Thomas C., to Pfizer Inc. Ascorbic acid intermediates. 4,283,340, Cl. 260-340.700.

Creasy, Walter, to GAF Corporation. Permeation resistant covering material. 4,283,456, Cl. 428-282.000.

Critchfield, Frank E.: *See—*
Armstrong, George H.; Gerkin, Richard M.; and Critchfield, Frank E., 4,283,500, Cl. 521-137.000.

Crivello, James V., to General Electric Company. Heat curable processable epoxy compositions containing aromatic iodonium salt catalyst and copper salt cocatalyst. 4,283,312, Cl. 260-18.0EP.

Crum, Gerald W.; and Rooney, Brian M., to Nordson Corporation. Manually programmable robot with power-assisted motion during programming. 4,283,764, Cl. 364-513.000.

CSELT - Centro Studi e Laboratori Telecomunicazioni S.p.A.: *See—*
Tamburelli, Giovanni, 4,283,788, Cl. 375-14.000.

Cummins Engine Company: *See—*
Glasson, Richard E.; and Lauterbach, Jerre F., 4,282,960, Cl. 192-58.00C.

Currie, James R., to United States of America, National Aeronautics and Space Administration. Multi-channel temperature measurement amplification system. 4,282,752, Cl. 73-341.000.

Curry, Byron V., Jr. Composite container structure. 4,282,984, Cl. 220-404.000.

Curry, Donald J.; Knight, Gordon R.; and Kowalski, Daniel C., to Xerox Corporation. Optical memory having a parallel read out. 4,283,777, Cl. 369-32.000.

Curry, John L., to NCR Corporation. Multiline charge transfer panel input and hold system. 4,283,660, Cl. 315-169.200.

Curtis, Stanley F.: *See—*
Herd, William H., Jr.; Curtis, Stanley F.; Mullican, Vernon T.; and Jones, Robert W., 4,283,355, Cl. 261-44.00F.

Czaban, John D.: *See—*
Cormier, Alan D.; Webster, Milo E.; Czaban, John D.; Silverman, Neil D.; and Noble, Lynn W., 4,283,262, Cl. 204-195.00M.

Dahl, H. Douglas: *See—*
Mazza, Raymond L.; Dahl, H. Douglas; and Umphrey, Ronald W., 4,283,089, Cl. 299-16.000.

Dahlgrun, Rolf, to Hauni-Werke Korber & Co. KG. Method and apparatus for influencing the permeability of wrappers of filter cigarettes or the like. 4,282,889, Cl. 131-281.000.

Daimler-Benz Aktiengesellschaft: *See—*
Sacco, Bruno; and Renner, Hermann, 4,283,085, Cl. 296-84.00R.
Weber, Andreas; and Schaefer, Manfred, 4,283,067, Cl. 280-5.00A.

Dalens, Marcel; and Haas, Armand, to Societe des Plastiques de Carmaux Scasar; and Societe Chimique des Charbonnages CdF Chimie. Method of mulching with antistatic synthetic polymer film. 4,282,682, Cl. 47-9.000.

D'Amico, John J.; and Marvel, John T., to Monsanto Company. Imidamides derived from 2-oxo-3-benzothiazoline acetic acid plant growth regulants. 4,283,220, Cl. 71-90.000.

Damminger, Rudolf. Composite material with a core and an adhering coating united thereto. 4,283,449, Cl. 428-72.000.

Dana Corporation: *See—*
Staab, Thomas E.; and Antonini, Joseph, 4,283,064, Cl. 277-81.00R.

Dancsi, Lajos: *See—*
Szantay, Csaba; Szabo, Lajos; Kalaus, Gyorgy; Dancsi, Lajos; Keve, Tibor; Karpati, Egon; and Szporny, Laszlo, 4,283,401, Cl. 424-256.000.

Danfoss A/S: *See—*
Hansen, Poul E.; and Dyhr, Jan, 4,283,646, Cl. 310-126.000.

Daniels, Peter J. L.; and Nagabhushan, Tattanahalli L., to Schering Corporation. 1-N-aminohydroxyacyl derivatives of gentamicin B. 4,283,528, Cl. 536-17.00R.

Dappen, Glen M., to Eastman Kodak Company. Analytical elements with improved reagent stability. 4,283,491, Cl. 435-10.000.

Dardoufas, Kimon C.: *See—*
Marshall, Robert M.; and Dardoufas, Kimon C., 4,283,292, Cl. 252-8.800.

Darling, Richard D.; and Lazarz, Christine A., to Hooker Chemicals & Plastics Corp. Electrolytic cell separator, tubular member component thereof and methods for manufacturing and using such separator and component. 4,283,264, Cl. 204-252.000.

Date, Kazuo H.; and Wainio, Ronald A., to McGraw-Edison Company. Operator for a circuit interrupter and disconnect switch combination. 4,283,610, Cl. 200-146.00R.

Dauel, Eugene F.: *See—*
Gostomski, John J.; Gostomski, Arnold R.; and Dauel, Eugene F., 4,283,073, Cl. 280-508.000.

Daugherty, Jack D.; Kantrowitz, Arthur R.; Sutton, George W.; and Zappa, Oswald L., to Avco Everett Research Laboratory, Inc. Laser operation with closed gas and tuned duct pulsing. 4,283,686, Cl. 331-94.50G.

Daughton, John W.; Gillett, Kenneth; and Nelson, Frank M., to Xerox Corporation. Programmable master controller communicating with plural controllers. 4,283,773, Cl. 364-900.000.

Daum, Gerhard: *See—*
Bernhardt, Gunther; and Daum, Gerhard, 4,283,565, Cl. 568-648.000.

Davenport, James D., to Eli Lilly and Company. Substituted isoxazolines for control of plant phytopathogens. 4,283,403, Cl. 424-263.000.

Davidson, Harold C.; and Parks, John H., to Caterpillar Tractor Co. Engine overspeed shut-down system. 4,282,838, Cl. 123-198.0DB.

Davidson, William A., to United States of America, Transportation. Combination absolute and differential temperature system. 4,282,753, Cl. 73-342.000.

Davies, Graham A., to Davy International (Oil & Chemicals) Ltd. Purification utilizing liquid membrane with electrostatic coalescence. 4,283,290, Cl. 210-643.000.

Davies, William D.; Skelhorne, Graham G.; and Warren, John B., to Diamond Shamrock Industrial Chemicals Limited. Photopolymerizable compositions, methods for their preparation, and methods for their use in coating substrates. 4,283,480, Cl. 430-270.000.

Davis, Robert E., to Ideal Toy Corporation. Mechanical sound mechanism. 4,282,676, Cl. 46-118.000.

Davis, Robert H.: *See—*
Schick, John W.; Davis, Robert H.; and Andress, Harry J., 4,283,293, Cl. 252-32.000.

Davy International (Oil & Chemicals) Ltd.: *See—*
Davies, Graham A., 4,283,290, Cl. 210-643.000.

Dayco Corporation: *See—*
Somers, M. John, 4,283,594, Cl. 174-47.000.

Debbaut, Christian A. M.: *See—*
Corke, Nicholas T.; and Debbaut, Christian A. M., 4,283,239, Cl. 156-85.000.

de Cadier, Eugene A. A. E.: *See—*
de Cadier, Marie, 4,283,058, Cl. 273-236.000.

de Cadier, Marie, to de Cadier, Eugene A. A. E., a part interest. Sequence arranging board game. 4,283,058, Cl. 273-236.000.

De Cristofaro, Nicholas J.: *See—*
Sexton, Peter; and De Cristofaro, Nicholas J., 4,283,225, Cl. 75-170.000.

Deem, Brian C., to Bendix Corporation, The. Control valve for fluid-operated clutch. 4,283,009, Cl. 236-86.000.

Deere & Company: *See—*
Branstetter, Ronald L., 4,282,711, Cl. 60-395.000.
McBee, Steve H., 4,282,702, Cl. 56-10.300.
Wilson, John E.; and Hengen, Edward J., 4,282,703, Cl. 56-14.600.

DeFord, Donald D.; Clardy, Edwin K.; and Fuller, Edward N., to Phillips Petroleum Company. Method and apparatus suitable for repeated, accurate chemical analyses. 4,283,201, Cl. 23-230.00A.

Degremont: *See—*
Saint-Dizier, Gilbert; Le Fur, Jean; and Louboutin, Robert, 4,283,282, Cl. 210-236.000.

Degussa Aktiengesellschaft: *See—*
Engel, Jurgen; Kleemann, Axel; Stroman, Fritz; and Thiemer, Klaus, 4,283,405, Cl. 424-267.000.

de Klein, Willem J.: *See—*
Zeilstra, Jacobus J.; de Klein, Willem J.; Bik, Joannes D.; and Vis, Jan, 4,283,314, Cl. 260-23.0AR.

Delagi, Richard G.: *See—*
Trenkler, George; Delagi, Richard G.; and Padovani, Francois A., 4,283,714, Cl. 340-365.00L.

Delavarenne, Serge Y.; Dubreux, Bernard; and Tellier, Pierre, to Produits Chimiques Ugine Kuhlmann. Process for the preparation of mononitro-1,2,3,4-tetrahydroanthraquinones. 4,283,345, Cl. 260-369.000.

De Lena, Oscar: *See—*
Paudice, Ciro; and De Lena, Oscar, 4,283,440, Cl. 427-108.000.

Deloach, Frank, Jr. Integral vehicle trailer hitch and electrical system. 4,283,072, Cl. 280-422.000.

DeMaria, Francesco: *See—*
Young, Chi C.; and DeMaria, Francesco, 4,283,365, Cl. 264-206.000.

deMauriac, Richard A.: *See—*
Fletcher, George L., Jr.; deMauriac, Richard A.; and Merrill, Stewart H., 4,283,477, Cl. 430-141.000.

de Mey, Charles F., II, to Perkin-Elmer Corporation, The. Valve assembly for pressurized fluid systems. 4,282,897, Cl. 137-515.700.

Demrick, Carl J.; and Greene, Frederick C., to Herder N.V. Socket for caster mounting. 4,282,629, Cl. 16-43.000.

Denisov, Vasily F.: *See—*
Bylinsky, Lev V.; Gavrilenko, Vladimir I.; Glumov, Ivan F.; Denisov, Vasily F.; and Meer, Vadim V., 4,283,763, Cl. 364-449.000.

Denka Chemical Corporation: *See—*
Barone, Bruno J.; and Click, Gaylon T., 4,283,307, Cl. 252-432.000.
Turner, Nathan L., 4,283,510, Cl. 525-379.000.

Denlinger, George W.: *See—*
Bok, Dennis E.; Bridge, Patrick E.; Coulter, Robert W.; Denlinger, George W.; Fernalld, Clifford S., Jr.; Hill, Charlie H., Jr.; Huliba,

David A.; Meckstroth, James R.; and Scranton, Robert J., 4,283,731, Cl. 346-75.000.
Desai, Rohit: *See*—
Shroff, James R.; and Desai, Rohit, 4,283,541, Cl. 546-336.000.
Deschanels, Francois; and Gard, Roger, to U.S. Philips Corporation. Capacitor having a housing provided with a crease which is expandable in reaction to overpressure. 4,283,750, Cl. 361-274.000.
de Sousa, Bernardo; Muntwyler, Rene; and Schmid, Werner, to Ciba-Geigy Corporation. Method of protecting keratinous material from attack by insects that feed on keratin by treatment with 5-phenylcarbamoylbarbituric acid compounds. 4,283,444, Cl. 427-421.000.
De Steur, Hubert; Vandenbossche, Chris; and Heyneman, Guido, to Siemens Aktiengesellschaft. Two beam alternating light colorimeter. 4,283,142, Cl. 356-319.000.
Deutsch, Leslie J.: *See*—
Deutsch, Ralph; and Deutsch, Leslie J., 4,282,786, Cl. 84-1.010.
Deutsch, Ralph; and Deutsch, Leslie J., to Kawai Musical Instruments Mfg. Co., Ltd. Automatic chord type and root note detector. 4,282,786, Cl. 84-1.010.
Deutsche Gold und- Silber-Scheideanstalt Vormals Roessler: *See*—
Lussling, Theodor; Maierhofer, Alfred; and Scherberich, Paul, 4,283,337, Cl. 260-326.14T.
Deutsche Texaco Aktiengesellschaft: *See*—
Grodde, Karl-Heinz; and Volz, Hartwig, 4,282,930, Cl. 166-305.00R.
Devorak, Dwight F. Mobile spreader apparatus drive system. 4,283,014, Cl. 239-677.000.
deVries, Louis; and King, John M., to Chevron Research Company. Process for preparing a sulfurized molybdenum-containing composition and lubricating oil containing said composition. 4,283,295, Cl. 252-46.400.
Dexter, Martin; and Winter, Roland A. E., to Ciba-Geigy Corporation. 2-(2-Hydroxy-3,5-di-tert-octylphenyl)-2H-benzotriazole stabilized compositions. 4,283,327, Cl. 260-45.8NT.
Dexter, Theodore H.; and Fuller, Willard A., to Hooker Chemicals & Plastics Corp. Stable non-caking aqueous slurry of sodium chlorate and sodium chloride and method of making. 4,283,287, Cl. 252-187.00R.
Dhabhar, Dadi J.; and Shah, Nutan B., to Richardson-Merrell Inc. Dentifrices with improved soluble fluoride availability. 4,283,385, Cl. 424-52.000.
Diamond, Julius; and Zalipsky, Jerome J., to William H. Rorer, Inc. Amidinoureas. 4,283,555, Cl. 564-53.000.
Diamond Shamrock Industrial Chemicals Limited: *See*—
Davies, William D.; Skelhorne, Graham G.; and Warren, John B., 4,283,480, Cl. 430-270.000.
Diamond Shamrock Plastics Corporation: *See*—
Peeples, William D., 4,283,516, Cl. 526-202.000.
Dick, Bernard M., to Western Electric Co., Inc. Leak testing hermetically sealed electronic articles. 4,282,744, Cl. 73-49.300.
Diehl, Francis L., to Procter & Gamble Company, The. Bleaching process and compositions. 4,283,301, Cl. 252-102.000.
Diener, Rudolf, to Autoelektronik AG. Rotor-carburetor having an idling mixture arrangement for internal combustion engines. 4,283,358, Cl. 261-88.000.
Diesel Kiki Company, Ltd.: *See*—
Abe, Yoshiaki, 4,283,619, Cl. 219-492.000.
Satoh, Yuji, 4,282,901, Cl. 137-625.640.
Dietrich, William J., to DMI, Inc. Multiple section, adjustable width plow. 4,282,935, Cl. 172-284.000.
Dietz, Hermann: *See*—
Maurer, Helmut; Muller, Klaus; Rieger, Franz; Linder, Ernst; Dietz, Hermann; Friese, Karl-Hermann; and Ziegler, Bodo, 4,283,261, Cl. 204-195.00S.
Dietze, Gunther; and Wicklmayr, Matthias, to THERA Gesellschaft fur Patentverwertung mbH. Infusion solutions containing amino acids and mineral salts. 4,283,392, Cl. 424-177.000.
Digital Monitoring Products: *See*—
Caldwell, Carl W.; and Britton, Rick A., 4,283,717, Cl. 340-506.000.
Di Lorenzo, Eugene L. End threaded locking device and method for using same. 4,282,977, Cl. 211-74.000.
Dinger, Edward H., to General Electric Company. Motor field exciter. 4,283,667, Cl. 318-356.000.
Disko, Harry: *See*—
Hanson, Steven P.; Schoenfield, Palmer J.; and Disko, Harry, 4,282,674, Cl. 46-39.000.
Rosenwinkel, Donald A.; and Disko, Harry, 4,283,127, Cl. 351-158.000.
Disteldorf, Josef; Hubel, Werner; and Wolf, Elmar, to Chemische Werke Huls AG. Method for the production of 2,4,6-triketohexahydrotriazines. 4,283,535, Cl. 544-193.000.
Divers, Edward F.; and LaScola, John C., to United States of America, Interior. Slideboard device for underground mine face ventilation. 4,282,802, Cl. 98-50.000.
DMI, Inc.: *See*—
Dietrich, William J., 4,282,935, Cl. 172-284.000.
Dobroskok, Boris E.: *See*—
Tabakov, Vladimir P.; Kornev, Boris P.; Buchenkov, Leonid N.; Gorbunov, Andrei T.; Kaschavtsev, Vladilen E.; Pilatovsky, Viktor P.; Gurov, Evgeny I.; Obrezkov, Alexandr I.; Vakhitov, Gadel G.; Bulgakov, Rishad T.; Maximov, Vladimir P.; Maxutov, Rafkhat A.; Shnirelman, Alexandr I.; Dobroskok, Boris E.; Asfandiyarov, Khalim A.; and Fatkullin, Airat K., deceased, 4,283,088, Cl. 299-2.000.
Dolhyj, Serge R.: *See*—
Velenyi, Louis J.; and Dolhyj, Serge R., 4,283,583, Cl. 585-467.000.
Domtar Inc.: *See*—
Lewinton, Colin H.; and Savit, Joseph, 4,283,473, Cl. 430-64.000.
Dopkin, Raymond J.; and Hochberg, Jerome, to Du Pont de Nemours, E. I., and Company. Manufacture of seamless laminated tubing. 4,282,905, Cl. 156-74.000.
Doster, Robert C.; Judson, Beth R.; and Soo Hoo, Kathleen G., to Carnation Company. Preparing centerfilled food product. 4,283,430, Cl. 426-284.000.
Doty, Wendell E., to Battle Creek Equipment Co. Irradiation device and removable timer useful therewith. 4,283,661, Cl. 315-360.000.
Dow Chemical Company, The: *See*—
Brady, Thomas P.; and Langer, Horst G., 4,283,501, Cl. 525-2.000.
Gibbs, Ronald L., 4,283,515, Cl. 526-127.000.
Lane, George A.; and Rossow, Harold E., 4,283,298, Cl. 252-70.000.
McDonald, Charles J.; Van Landingham, John V.; and Givens, Steven P., 4,282,928, Cl. 166-274.000.
Downing, James W., to McDonnell Douglas Corporation. Large clearance fairlead grommet. 4,282,627, Cl. 16-2.000.
Drake, Cyril F., to International Standard Electric Corporation. $ZnO—SeO_2—R_2O$ soluble glass. 4,283,227, Cl. 106-47.00R.
Drescher, Heinz; Imbusch, Heinrich; and Lampe, Hans H., to International Business Machines Corporation. Arrangement for determining the length of arbitrary shift registers. 4,283,620, Cl. 235-92.0SH.
Dresser Industries, Inc.: *See*—
Fletcher, Robert N.; and Christian, Damon N., 4,282,665, Cl. 37-142.00A.
Dreyfus, Marc G.; and Pellman, Arnold, to Dreyfus-Pellman. Electro-optical scanning system. 4,283,147, Cl. 356-445.000.
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Dreyfus, Marc G.; and Pellman, Arnold, 4,283,147, Cl. 356-445.000.
DSO "Montaji"—Kontrolno Zavarachno Upravlenie: *See*—
Kulekov, Stefan I.; and Pavlov, Alexander S., 4,283,628, Cl. 250-358.00P.
DuBois, Grant E.; and Stephenson, Rebecca A. G. Sulfamo dihydrochalcone sweeteners. 4,283,434, Cl. 426-548.000.
Dubreux, Bernard: *See*—
Delavarenne, Serge Y.; Dubreux, Bernard; and Tellier, Pierre, 4,283,345, Cl. 260-369.000.
Duceppe, Antoine, to Revelations Antoine Ltee. Fingernail treating device. 4,282,891, Cl. 132-73.500.
Duffy, John A., to Avon Products, Inc. Nail enamel composition. 4,283,324, Cl. 260-31.20N.
Dunckhorst, William H. Timed shower head valve. 4,282,899, Cl. 137-624.180.
Dunlap, Albert R.; and Nester, Dallas G., to Brown Wooten Mills, Inc. Decorative footlet-type sock. 4,282,727, Cl. 66-172.00E.
Dunlop Limited: *See*—
Harrison, Reginald, 4,282,816, Cl. 105-224.100.
Du Pont de Nemours, E. I., and Company: *See*—
Andreades, Sam; Beske, Grant A.; and Lott, John W., 4,283,243, Cl. 156-237.000.
Binau, Douglas E.; and Speicher, Emmett J., 4,283,254, Cl. 203-4.000.
Dopkin, Raymond J.; and Hochberg, Jerome, 4,282,905, Cl. 156-74.000.
Forgey, James H.; Stephens, Donald R.; and Tan, Engnam A., 4,282,812, Cl. 102-318.000.
Grant, John W., 4,283,276, Cl. 209-155.000.
Hartmann, Hans S., 4,282,922, Cl. 164-97.000.
Herkes, Frank E., 4,283,306, Cl. 252-432.000.
Longworth, Ruskin, 4,283,361, Cl. 264-120.000.
Murphy, Charles V.; and Statz, Robert J., 4,283,317, Cl. 260-27.00R.
Richardson, Paul N., 4,283,502, Cl. 525-66.000.
Richter, John W., 4,283,533, Cl. 544-171.000.
Urban, Edward J.; and Vitcusky, William P., 4,283,459, Cl. 428-379.000.
Durand, Tulvio S., to United States of America, Army. Automatic integrator control for transientless switching of controller gains in manual tracking systems. 4,283,670, Cl. 318-591.000.
Durkoppwerke GmbH: *See*—
Fenzl, Horst, 4,282,820, Cl. 112-121.150.
Duro-Test Corporation: *See*—
Brett, Jack, 4,283,653, Cl. 313-341.000.
Du Toit, Rudolph M., to Edward, Christopher; Kabutz, Hans Rudolf; and Corker, Frank. Cleaning fluid injection device. 4,282,867, Cl. 128-66.000.
Duwel, Edward C.: *See*—
Eckert, Alton B.; and Duwel, Edward C., 4,283,721, Cl. 340-680.000.
Dyakov, Valery M.: *See*—
Voronkov, Mikhail G.; Platonova, Ada T.; Simbirtsev, Nikolai L.; Dyakov, Valery M.; Dyban, Andrei P.; and Kuznetsov, Igor G., 4,283,419, Cl. 424-316.000.
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Dyhr, Jan: *See*—
Hansen, Poul E.; and Dyhr, Jan, 4,283,646, Cl. 310-126.000.
Dynamit Nobel AG: *See*—
Bernhardt, Gunther; and Daum, Gerhard, 4,283,565, Cl. 568-648.000.

Dynamit Nobel Aktiengesellschaft: *See*—
Spielau, Paul; Putz, Peter; Weiss, Richard; and Schraube, Hansfritz, deceased, 4,282,697, Cl. 52-746.000.
Dyneer Corporation: *See*—
Kraft, Derald H., 4,283,182, Cl. 474-110.000.
Sproul, Nolte V., 4,283,181, Cl. 474-110.000.
Easter, Finis C.: *See*—
Clock, Donald P.; and Easter, Finis C., 4,283,790, Cl. 375-71.000.
Easter, Ross A.: *See*—
Winters, William C.; Chang, Hsien-Hsin; Anderson, George R.; Easter, Ross A.; and Sholl, Jeffrey J., 4,283,427, Cl. 426-107.000.
Eastman Kodak Company: *See*—
Campbell, Gerald A.; Hollister, Kenneth R.; and Sutton, Richard C., 4,283,504, Cl. 525-261.000.
Columbus, Richard L., 4,283,134, Cl. 354-275.000.
Dappen, Glen M., 4,283,491, Cl. 435-10.000.
Farnsworth, Gary V.; Gandy, Gerald C.; and Richards, Hugh W., 4,283,476, Cl. 430-140.000.
Fletcher, George L., Jr.; deMauriac, Richard A.; and Merrill, Stewart H., 4,283,477, Cl. 430-141.000.
Frank, David S.; and Sundberg, Michael W., 4,283,382, Cl. 424-8.000.
Gompf, Thomas E.; Hammond, Howell A.; and Mooberry, Jared B., 4,283,472, Cl. 430-17.000.
Gourley, Robert N., 4,283,332, Cl. 260-155.000.
Van Lare, Earl J., 4,283,488, Cl. 430-588.000.
Eaton Corporation: *See*—
Brown, James M.; Kaiser, Hermann; and Olson, Jerry A., 4,282,751, Cl. 73-202.000.
Kolze, Lawrence A., 4,283,040, Cl. 251-30.000.
Roscoe, Charles S., 4,282,961, Cl. 192-58.00B.
Ebert, Hermann, to Siemens Aktiengesellschaft. Control signal generator for the commutating device of a brushless electronics motor. 4,283,664, Cl. 318-138.000.
Eckardt, Rudolf: *See*—
Gutlich, Karl-Friedrich; Kappus, Wolfgang; Zweigardt, Herbert; and Eckardt, Rudolf, 4,283,467, Cl. 429-51.000.
Eckert, Alton B.; and Duwel, Edward C., to Pitney Bowes Inc. Electronic postage meter having check date warning. 4,283,721, Cl. 340-680.000.
Eddy, George R., to Century Machine, Inc. Structure of truing piston cylinders. 4,282,734, Cl. 72-54.000.
Edelman, Brian S.; and Robinson, Ralph L., Jr., to Ford Motor Company. Binary input/output processing in a digital computer using assigned times for input and output data. 4,283,761, Cl. 364-200.000.
Edelman, Seymour: *See*—
Wooden, Bruce J.; and Edelman, Seymour, 4,283,461, Cl. 428-422.000.
Eden, Dayton D. Optical modulation with vanadium oxide thin films. 4,283,113, Cl. 350-96.150.
Edwall, Bengt; and Kullendorff, Anders. Method and apparatus for preventing corrosion in a steam power plant. 4,282,715, Cl. 60-646.000.
Edward, Christopher: *See*—
Du Toit, Rudolph M., 4,282,867, Cl. 128-66.000.
Edwards, Philip K., to Computer Operations. Variable size dot matrix character generator in which a height signal and an aspect ratio signal actuate the same. 4,283,724, Cl. 340-731.000.
Eggler, James F.; and Hess, Hans-Jurgen E., to Pfizer Inc. Bronchodilation with 13,14-dihydro-15-aklenyl prostaglandins. 4,283,417, Cl. 424-305.000.
Ehrgott, Roland; and Meindl, Gerhard, to Siemens Aktiengesellschaft. Holder for an electromagnetic coil. 4,283,699, Cl. 336-67.000.
Ehrlich, Stefan; and Levenson, William L., to Levor, Incorporated. Power generation by exchange of latent heats of phase transition. 4,283,211, Cl. 62-4.000.
Electric Power Research Institute, Inc.: *See*—
Levin, Harry P., 4,283,643, Cl. 307-309.000.
Electricite de France: *See*—
Andro, Jean; Bessouat, Roger; Cerdan, Jean-Pierre; and Talleu, Patrick, 4,283,206, Cl. 55-187.000.
Eli Lilly and Company: *See*—
Cannon, William N., 4,283,349, Cl. 260-505.00R.
Davenport, James D., 4,283,403, Cl. 424-263.000.
Gesellchen, Paul D.; and Shuman, Robert T., 4,283,329, Cl. 260-112.50R.
Koch, Kay F.; and Kastner, Ralph E., 4,283,390, Cl. 424-122.000.
Ose, Earl E., 4,283,388, Cl. 424-114.000.
Shuman, Robert T., 4,283,330, Cl. 260-112.50R.
Elias, Luis R.: *See*—
Madey, John M. J.; Elias, Luis R.; and Smith, Todd I., 4,283,687, Cl. 331-94.5PE.
Eller, Fritz D. Overload protection for transmission system with planetary-gear train. 4,282,776, Cl. 74-801.000.
Elliott, Richard A.; Massey, Gail A.; and Shaw, John B., to Oregon Graduate Center for Study and Research. Light-beam streaking employing crystal with traveling lens and multiple cross-crystal reflections. 4,283,122, Cl. 350-379.000.
Ellis, Harold G. Side view mirror apparatus for vehicles. 4,283,117, Cl. 350-289.000.
Ellis, James F. Print roller. 4,282,810, Cl. 101-376.000.
Ellis, Leonard C., to Virginia Chemicals Inc. Process for manufacture of stable sodium dithionite slurries. 4,283,303, Cl. 252-188.000.
Elsasser, Heinrich, to Sulzer Morat GmbH. Control magnet system. 4,282,724, Cl. 66-75.200.
Eltra Corporation: *See*—
Newberry, Richard D.; and Brayley, Elwin J., 4,282,839, Cl. 123-335.000.
Embro, Joseph J., Jr., to Mead Corporation, The. Heat sealing apparatus. 4,282,699, Cl. 53-298.000.
Emerson Electric Co.: *See*—
Ballas, George C., Sr., 4,282,652, Cl. 30-276.000.
Enders, Max L. Shock proof fastener assembly for vehicle wheels and other applications. 4,283,091, Cl. 301-9.0DN.
Engel, Jurgen; Kleemann, Axel; Stroman, Fritz; and Thiemer, Klaus, to Degussa Aktiengesellschaft. Dithienylpiperidines, pharmaceutical compositions thereof, and method of use thereof. 4,283,405, Cl. 424-267.000.
Engelhard, Philippe: *See*—
Legendre, Michel; and Engelhard, Philippe, 4,283,585, Cl. 585-482.000.
Engels, Walter, to Milliken Research Corporation. Pile fabric sculpturing apparatus. 4,282,635, Cl. 26-16.000.
Engelsmann, Dieter; Lermann, Peter; Nicko, Reinhard; Schultes, Herbert; and Wagner, Karl, to Agfa-Gevaert AG. Photographic camera. 4,283,132, Cl. 354-202.000.
English Clays Lovering Pochin & Company Ltd.: *See*—
Burr, Kenneth J., 4,282,745, Cl. 73-61.400.
Ephrath, Linda M., to International Business Machines Corporation. Reactive ion etching. 4,283,249, Cl. 156-643.000.
Erickson, Donald C. Regenerable manganese oxide hot gas desulfurization process. 4,283,374, Cl. 423-230.000.
Erickson, John W., to Kobe, Inc. Pump and centrifugal separator apparatus. 4,283,005, Cl. 233-47.00A.
Ernst Leitz Wetzlar GmbH: *See*—
Jacoby, Hans-Dieter, 4,283,669, Cl. 318-578.000.
Wieber, Karl; Janke, Heinrich; Kraft, Winfried; and Lisfeld, Robert, 4,283,111, Cl. 350-39.000.
Erth, Richard A.: *See*—
Kountz, Kenneth J.; Erth, Richard A.; and Norbeck, Dean K., 4,282,718, Cl. 62-115.000.
Kountz, Kenneth J.; Erth, Richard A.; and Norbeck, Dean K., 4,282,719, Cl. 62-115.000.
Erwin Sick Gesellschaft mit beschrankter Haftung Optik-Elektronik: *See*—
von Stein, Walter; and Fetzer, Gunter, 4,283,623, Cl. 235-465.000.
Escher Wyss GmbH: *See*—
Braun, Heinz; Kiesel, Karl; and Stotz, Wolf-Gunter, 4,283,023, Cl. 242-67.10R.
Heinbockel, Wolfgang; Siewert, Wolfgang; Kahmann, Albrecht; and Lambrecht, Gerhard, 4,283,275, Cl. 209-3.000.
Escher Wyss Limited: *See*—
Christ, Alfred; and Lehmann, Rolf, 4,282,638, Cl. 29-116.0AD.
Christ, Alfred; and Lehmann, Rolf, 4,282,639, Cl. 29-116.0AD.
Eshghy, Siavash, to Rockwell International Corporation. Tension control of fasteners. 4,282,640, Cl. 29-240.000.
Espaignol, Jacques, to Thomson-CSF. Process for the manufacture of millimeter wave sources of the module type. 4,283,734, Cl. 357-81.000.
Etablissements Generaux de Mecanique de l'Ouest: *See*—
Bronnec, Jean A. L., 4,283,171, Cl. 432-112.000.
Evans, Donald J.: *See*—
Woolston, A. Brent; and Evans, Donald J., 4,283,185, Cl. 493-15.000.
Evans, Orde R.; Rhodes, William D.; and Trahan, Joseph O., to Oreco III, Inc. Method and apparatus for a guard. 4,283,161, Cl. 405-216.000.
Ex-Cell-O Corporation: *See*—
Barlow, Roland J.; and Keem, David L., 4,282,798, Cl. 91-358.00R.
Extranuclear Laboratories, Inc.: *See*—
Siegel, Melvin W., 4,283,626, Cl. 250-292.000.
Exxon Production Research Company: *See*—
Maus, L. Donald; Speers, Jerry M.; and Howell, James D., 4,282,939, Cl. 175-7.000.
Exxon Research & Engineering Co.: *See*—
Clarke, Christopher T., 4,283,294, Cl. 252-32.70R.
Clementoni, Dominick; and Corbett, Luke W., 4,283,230, Cl. 106-274.000.
Clementoni, Dominick; and Corbett, Luke W., 4,283,231, Cl. 106-274.000.
Gladrow, Elroy M., 4,283,309, Cl. 252-455.00Z.
Greenwood, Sydney H. J., 4,283,269, Cl. 208-45.000.
Maa, Peter S.; and Vernon, Lonnie W., 4,283,267, Cl. 208-8.0LE.
Savage, David W., 4,283,204, Cl. 55-3.000.
Zimmerman, Abraham A., 4,283,203, Cl. 44-62.000.
Eymard, Pierre: *See*—
Pigerol, Charles; Vernieres, Jean-Claude; Eymard, Pierre; Simiand, Jacques; Broll, Madeleine; and Lacolle, Jean-Yves, 4,283,420, Cl. 424-317.000.
Ezaki, Norio; Miyadoh, Shinji; Ogawa, Yasuaki; Hisamatsu, Takashi; Fukuyashu, Harumi; and Yamada, Yujiro, to Meiji Seika Kaisha Ltd. Novel antibiotic, BN-183B substance. 4,283,389, Cl. 424-116.000.
Ezawa, Sadaaki: *See*—
Obayashi, Nobuharu; Hashizume, Hikaru; Kameyama, Seiji; Ezawa, Sadaaki; Kondo, Tatsunori; Takauji, Kiyomi; and Aoyama, Tohru, 4,282,785, Cl. 84-1.010.
Fabbrica d'Armi Pietro Beretta S.p.A.: *See*—
Beretta, Pier C., 4,282,795, Cl. 89-148.000.
Fabert, Herman A., Jr.: *See*—
Thiele, Arthur M.; and Fabert, Herman A., Jr., 4,282,664, Cl. 37-118.00R.

Fairhead, Michael J. B.; and Jung, Nicholas R., to Letraset USA, Inc. Method of making relief printing plates with concave printing areas. 4,283,484, Cl. 430-306.000.

Famin, Roger: *See—*
Martel, Jacques; and Famin, Roger, 4,283,727, Cl. 343-710.000.

Fan, Lucy L.; Wohlman, Alan; and Longan, Bobby J., to Frito-Lay, Inc. Method for frying foods and fried food products. 4,283,437, Cl. 426-637.000.

Fancher, Llewellyn W., to Stauffer Chemical Company. S-Alkyl and alkenyl-thiophenylacetamido thiophosphates and phosphonates and method of controlling insects. 4,283,395, Cl. 424-211.000.

Faretra, Ronald A., to Varian Associates, Inc. Apparatus for mechanically clamping semiconductor wafer against pliable thermally conductive surface. 4,282,924, Cl. 165-80.00E.

Farina, Attilio, to Indesit Industria Elettrodomestici Italiana S.p.A. Circuit arrangement with frequency synthesis for the tuning of receiving sets. 4,283,791, Cl. 455-183.000.

Farnsworth, Gary V.; Gandy, Gerald C.; and Richards, Hugh W., to Eastman Kodak Company. Photographic element having a magnetic recording stripe overlying an antistatic layer. 4,283,476, Cl. 430-140.000.

Farr, Robert A.: *See—*
Carr, Albert A.; and Farr, Robert A., 4,283,404, Cl. 424-267.000.

Farrell, Roscoe M.: *See—*
Shields, Harper; and Farrell, Roscoe M., 4,282,725, Cl. 66-157.000.

Fatkullin, Airat K., deceased: *See—*
Tabakov, Vladimir P.; Kornev, Boris P.; Buchenkov, Leonid N.; Gorbunov, Andrei T.; Kaschavtsev, Vladilen E.; Pilatovsky, Viktor P.; Gurov, Evgeny I.; Obrezkov, Alexandr I.; Vakhitov, Gadel G.; Bulgakov, Rishad T.; Maximov, Vladimir P.; Maxutov, Rafkhat A.; Shnirelman, Alexandr I.; Dobroskok, Boris E.; Asfandiyarov, Khalim A.; and Fatkullin, Airat K., deceased, 4,283,088, Cl. 299-2.000.

Fatkullina, Neili N., administrator: *See—*
Tabakov, Vladimir P.; Kornev, Boris P.; Buchenkov, Leonid N.; Gorbunov, Andrei T.; Kaschavtsev, Vladilen E.; Pilatovsky, Viktor P.; Gurov, Evgeny I.; Obrezkov, Alexandr I.; Vakhitov, Gadel G.; Bulgakov, Rishad T.; Maximov, Vladimir P.; Maxutov, Rafkhat A.; Shnirelman, Alexandr I.; Dobroskok, Boris E.; Asfandiyarov, Khalim A.; and Fatkullin, Airat K., deceased, 4,283,088, Cl. 299-2.000.

Fedewitz, James A. Thermally-activated closure device. 4,283,006, Cl. 236-1.00G.

Feller, Otto; Oepen, Heinz; Kuhl, Manfred; Skrobek, Alois; Bornefeld, Horst; Seiler, Hans G.; and Johann, Walter, to Goetze AG. Method and lathe for machining out-of-round circumferences. 4,282,784, Cl. 82-19.000.

Fenner, Jurgen, to Th. Goldschmidt AG. Process for the preparation of basic zirconium carbonate of high purity. 4,283,377, Cl. 423-419.00P.

Fenton, Donald M.; and Gowdy, Hugh W., to Union Oil Company of California. Method for removing hydrogen sulfide from gas streams. 4,283,379, Cl. 423-571.000.

Fenzl, Horst, to Durkoppwerke GmbH. Workpiece-clamping assembly at sewing station. 4,282,820, Cl. 112-121.150.

Fernalld, Clifford S., Jr.: *See—*
Bok, Dennis E.; Bridge, Patrick E.; Coulter, Robert W.; Denlinger, George W.; Fernalld, Clifford S., Jr.; Hill, Charlie H., Jr.; Huliba, David A.; Meckstroth, James R.; and Scranton, Robert J., 4,283,731, Cl. 346-75.000.

Fernando, James U. R., to Air Preheater Company, Inc., The. Filter bag cleaning system. 4,283,208, Cl. 55-304.000.

Ferrill, Jess B.; Hughes, Richard L.; and Soderstrom, Melvin A., to AMP Incorporated. Terminal for cross connect apparatus. 4,283,105, Cl. 339-97.00R.

Fetzer, Gunter: *See—*
von Stein, Walter; and Fetzer, Gunter, 4,283,623, Cl. 235-465.000.

Fiat-Allis Construction Machinery, Inc.: *See—*
Sandrock, Don G., 4,282,769, Cl. 74-475.000.

Field, Arthur K.; and Harwood, Richard J., to Merck & Co., Inc. Topical application of interferon inducers. 4,283,393, Cl. 424-180.000.

Fikse, Tyman H., to Robbins Company, The. Conveyor mounted excavator. 4,283,090, Cl. 299-33.000.

Finch, Colin M. System controlling apparatus which compares signals from sensors monitoring passing objects with pre-determined parameter information to control the system. 4,283,031, Cl. 246-128.000.

Findeisen, Kurt: *See—*
Wagner, Kuno; Niggemann, Johannes; Findeisen, Kurt; and Scheinpflug, Hans, 4,283,219, Cl. 71-28.000.

Fine, Francois: *See—*
Jequier, William; Ghenassia, Elie; Fine, Francois; and Krempf, Gerard, 4,283,577, Cl. 568-841.000.

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Fridrich, Janos; Hetesi, Zoltan; Kisteleki, Gusztav; Misangyi, Laszlo; Szegletes, Emil; and Szabo, Jozsef, 4,283,598, Cl. 174-169.000.

Fiocchi, Guilio, to Berfi S.p.A. Explosive actuated tools for driving anchoring members. 4,282,714, Cl. 60-632.000.

Firmenich SA: *See—*
Pickenhagen, Wilhelm, 4,283,433, Cl. 426-534.000.

Fischer, Artur. Contact block with resilient socket contacts. 4,283,108, Cl. 339-198.00K.

Fitzgerald, Robert E. Display holder. 4,282,976, Cl. 211-59.100.

Flaherty, Robert, to United States of America, Energy. Ultra high vacuum seal arrangement. 4,283,079, Cl. 285-381.000.

Fletcher, George L., Jr.; deMauriac, Richard A.; and Merrill, Stewart H., to Eastman Kodak Company. Photothermographic material and process. 4,283,477, Cl. 430-141.000.

Fletcher, John M. Inert atmosphere indigo dyeing. 4,283,198, Cl. 8-653.000.

Fletcher, Robert N.; and Christian, Damon N., to Dresser Industries, Inc. Excavator tooth assembly. 4,282,665, Cl. 37-142.00A.

Floyd, Middleton B., Jr., to American Cyanamid. 1-Descarboxy-1-keto-ester(ketoacid)-prostaglandins. 4,283,550, Cl. 560-53.000.

Flynn, Vincent J. Radiopaque polyurethane resin compositions. 4,282,876, Cl. 128-349.00R.

Flynn, Vincent J. Radiopaque polyurethane resin compositions. 4,283,447, Cl. 428-36.000.

FMC Corporation: *See—*
Kondo, Kiyoshi; Takashima, Toshiyuki; and Tunemoto, Daiei, 4,283,341, Cl. 260-343.30R.
Orlando, Franklin P., 4,282,706, Cl. 56-330.000.

Focks, Dana A.; and Hock, John W. Flying insect trap. 4,282,673, Cl. 43-113.000.

Foley, James W., to Polaroid Corporation. Novel triarylmethane compounds. 4,283,538, Cl. 546-94.000.

Foley, James W.: *See—*
Cincotta, Louis; and Foley, James W., 4,283,537, Cl. 546-94.000.

Fomac, Inc.: *See—*
Forrestall, Richard J.; and Wilson, David G., 4,283,070, Cl. 280-274.000.

Fontaine, Jean F. L., to Goodyear Tire & Rubber Company, The. Pneumatic tire. 4,282,915, Cl. 152-209.00R.

Fontan, Andre. Grape picking machine. 4,282,705, Cl. 56-330.000.

Forberg, Horst; Hegner, Gunter; and Stoewe, Anneliese, to Krone GmbH. Electrical crimp connector. 4,283,103, Cl. 339-59.00M.

Ford Motor Company: *See—*
Edelman, Brian S.; and Robinson, Ralph L., Jr., 4,283,761, Cl. 364-200.000.
Fox, David H.; and Kostan, Charles C., 4,282,836, Cl. 123-146.50A.
Graessley, William J., 4,283,762, Cl. 364-431.000.

Foret, Roger; and van der Hoeven, Philippus C., to Lever Brothers Company. Particulate bleach compositions. 4,283,302, Cl. 252-102.000.

Forgey, James H.; Stephens, Donald R.; and Tan, Engnam A., to Du Pont de Nemours, E. I., and Company. Field-primable chub cartridge having a longitudinal threading tunnel integral therewith. 4,282,812, Cl. 102-318.000.

Forrestall, Richard J.; and Wilson, David G., to Fomac, Inc. Recumbent bicycle. 4,283,070, Cl. 280-274.000.

Forsyth Dental Infirmary for Children: *See—*
Szabo, Elek I., 4,283,199, Cl. 23-230.00B.

Fortino, Andres G.; Geipel, Henry J., Jr.; Heller, Lawrence G.; and Silverman, Ronald, to International Business Machines Corporation. Method of making a transistor array. 4,282,646, Cl. 29-571.000.

Fortune, William S. Handles for pliers. 4,282,783, Cl. 81-428.00R.

Fowler, Stephen L., to W. R. Grace & Co. Irradiated film. 4,283,630, Cl. 250-492.00B.

Fox, David H.; and Kostan, Charles C., to Ford Motor Company. Lightweight distributor rotor driveshaft. 4,282,836, Cl. 123-146.50A.

Fox, Robert O. Chain breaking tool. 4,282,707, Cl. 59-7.000.

Fraissl, Klaus, to Richard Wolf GmbH. Beam splitters for endoscopes comprising a dual observation system. 4,283,115, Cl. 350-171.000.

Franch, Gino. Rotational speed and torque mechanical transducer. 4,282,772, Cl. 74-679.000.

Franetzki, Manfred; Gagneur, Klaus; and Prestele, Karl, to Siemens Aktiengesellschaft. Device for the pre-programmable infusion of liquids. 4,282,872, Cl. 128-213.00R.

Frank, David S.; and Sundberg, Michael W., to Eastman Kodak Company. Fluorescent labels comprising rare earth chelates. 4,283,382, Cl. 424-8.000.

Frank, Dieter; and Hennig, Kurt, to Robert Bosch GmbH. Cross-track distributor for video signals. 4,283,711, Cl. 340-166.00R.

Frank, Robert I.: *See—*
Kaplow, Roy; and Frank, Robert I., 4,283,589, Cl. 136-249.000.

Frankel, Bernard. Floral arrangement containers. 4,282,683, Cl. 47-41.00R.

FranRica Mfg. Inc.: *See—*
Hay, Lloyd F.; Rica, Albert F.; and Webber, J. R., 4,282,925, Cl. 165-94.000.

Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H.: *See—*
Theurer, Josef, 4,282,663, Cl. 37-104.000.

Frech, Kenneth J.; and Tazuma, James J., to Goodyear Tire & Rubber Company, The. Method for removal of sulfur compounds from a gas. 4,283,373, Cl. 423-226.000.

Freedman, Betty; and Blevins, Anne M., to Concepts for Women, Inc. Appearance modifying panty hose. 4,282,609, Cl. 2-239.000.

Freeman, Roger K.; and Goebel, Franz, to GTE Products Corporation. Anode structure for an electrochemical cell. 4,283,470, Cl. 429-209.000.

Freestone, Frank J.: *See—*
Meyer, Raymond A.; and Freestone, Frank J., 4,283,128, Cl. 354-79.000.

Frenker-Hackfort, Ludger: *See—*
Janzen, Wolfgang; and Frenker-Hackfort, Ludger, 4,283,183, Cl. 474-162.000.

Fridrich, Janos; Hetesi, Zoltan; Kisteleki, Gusztav; Misangyi, Laszlo; Szegletes, Emil; and Szabo, Jozsef, to Finomkeramiaipari Muvek. Line post insulator with swinging stirrup and clamping jaws for overhead lines of more than 1000 volts. 4,283,598, Cl. 174-169.000.

Friedrichs, Josef, to Ringfeder G.m.b.H. Force absorbing arrangement. 4,282,979, Cl. 213-29.000.
Friese, Karl-Hermann: *See—*
Haecker, Wolf-Dieter; and Friese, Karl-Hermann, 4,283,441, Cl. 427-126.200.
Maurer, Helmut; Muller, Klaus; Rieger, Franz; Linder, Ernst; Dietz, Hermann; Friese, Karl-Hermann; and Ziegler, Bodo, 4,283,261, Cl. 204-195.00S.
Friis-Hansen, J. Method and apparatus for burning $CaCO_3$ and $MgCO_3$ materials. 4,283,202, Cl. 23-230.00A.
Frint, William R.; Copenhafer, William C.; and Pinsky, Michael L., to Intermountain Research and Devel. Corp. Recovery of alkali values from sodium bicarbonate-containing ore with ammonia. 4,283,372, Cl. 423-206.00T.
Frito-Lay, Inc.: *See—*
Fan, Lucy L.; Wohlman, Alan; and Longan, Bobby J., 4,283,437, Cl. 426-637.000.
Fritzmeier AG: *See—*
Kauss, Wolfgang; and Muncke, Ludwig, 4,283,087, Cl. 296-190.000.
Frohlich, Charles R., Jr.: *See—*
Bauer, William A.; Frohlich, Charles R., Jr.; Griffin, Raymond H.; and Henderson, Joseph G., 4,283,020, Cl. 242-25.00R.
Fuchs, Peter. Muffler. 4,282,950, Cl. 181-257.000.
Fuji Photo Film Co., Ltd.: *See—*
Aono, Toshiaki; and Hirose, Takeshi, 4,283,486, Cl. 430-505.000.
Hamaoka, Tsutomu; and Kasama, Yasuo, 4,283,479, Cl. 430-264.000.
Hirai, Hiroyuki; Matsushita, Sachio; Tsuyuki, Isao; and Watase, Kazumi, 4,283,266, Cl. 204-263.000.
Igarashi, Akira; and Sato, Kozo, 4,283,458, Cl. 428-341.000.
Kawamura, Koichi; Katsuyama, Harumi; and Sato, Hideo, 4,283,475, Cl. 430-70.000.
Kubotera, Kikuo; and Kashiwabara, Akira, 4,283,478, Cl. 430-156.000.
Fujii, Setsuro; Watanabe, Tsuyoshi; Shiota, Masashi; Okumoto, Itsuo; and Kayama, Naohiro, to Ono Pharmaceutical Co., Ltd. Guanidinobenzoic acid derivatives and process for their preparation. 4,283,418, Cl. 424-310.000.
Fujisawa Pharmaceutical Co., Ltd.: *See—*
Imanaka, Hiroshi; Hosoda, Junzi; Jomon, Kazuyoshi; Sakai, Heiichi; Ueda, Ikuo; and Morino, Daizou, 4,283,492, Cl. 435-47.000.
Fujisawa, Yoshiho. Magnet device for animals, in particular cattle. 4,283,698, Cl. 335-306.000.
Fujitsu Fanuc Limited: *See—*
Shimizu, Kanryo; and Kobayashi, Kengo, 4,282,955, Cl. 192-0.096.
Fukasawa, Atsushi: *See—*
Masuda, Yoshio; Fukasawa, Atsushi; Ashiwa, Jun; and Sato, Takuro, 4,283,697, Cl. 333-202.000.
Fukazawa, Nobuyuki: *See—*
Matsubara, Akira; Sakai, Hideaki; Suganuma, Toshio; Fukazawa, Nobuyuki; and Nakano, Takuo, 4,283,398, Cl. 424-246.000.
Fukuhara, Toru: *See—*
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Fukui, Yutaka; and Kagohara, Hiromi, to Hitachi, Ltd. Gas turbine nozzle. 4,283,234, Cl. 148-32.500.
Fukunaga, Kazuo: *See—*
Kakuhashi, Takeshi; and Fukunaga, Kazuo, 4,283,248, Cl. 156-637.000.
Fukuyashu, Harumi: *See—*
Ezaki, Norio; Miyadoh, Shinji; Ogawa, Yasuaki; Hisamatsu, Takashi; Fukuyashu, Harumi; and Yamada, Yujiro, 4,283,389, Cl. 424-116.000.
Fulde, Stefan: *See—*
Witek, Stanislaw; Grobelny, Damian; Ptaszkowska, Janina; Bielecki, Andrzej; Bakuniak, Edmund; Fulde, Stefan; and Gorska-Poczopko, Jadwiga, 4,283,399, Cl. 424-248.400.
Fuller, Edward N.: *See—*
DeFord, Donald D.; Clardy, Edwin K.; and Fuller, Edward N., 4,283,201, Cl. 23-230.00A.
Fuller, Willard A.: *See—*
Dexter, Theodore H.; and Fuller, Willard A., 4,283,287, Cl. 252-187.00R.
Furuya, Katusuke: *See—*
Miyazaki, Yorizo; and Furuya, Katusuke, 4,282,701, Cl. 53-465.000.
Fusek, Richard L.: *See—*
Huff, Lloyd; and Fusek, Richard L., 4,283,109, Cl. 350-3.760.
Fuyama, Hiroshi; and Tsuji, Kozo, to Sumitomo Chemical Company Limited. Oil-in-Water insecticidal and acaricidal emulsion. 4,283,415, Cl. 424-304.000.
Gacuzana, Delancey J. Scrubber apparatus. 4,282,623, Cl. 15-97.00R.
GAF Corporation: *See—*
Chakrabarti, Paritosh M.; and Kirchner, Darrell G., 4,283,321, Cl. 260-29.6MQ.
Charles, John J.; and Gasman, Robert C., 4,283,326, Cl. 260-40.00R.
Creasy, Walter, 4,283,456, Cl. 428-282.000.
Gagneur, Klaus: *See—*
Franetzki, Manfred; Gagneur, Klaus; and Prestele, Karl, 4,282,872, Cl. 128-213.00R.
Gaillard, Jean: *See—*
Chauvin, Yves; Commereuc, Dominique; Gaillard, Jean; Leger, Gerard; and Phung, Nhu Hung, 4,283,305, Cl. 252-431.00C.
Gallagher, Donald A., to Westworld Enterprises. Motorcycle cover. 4,283,084, Cl. 296-78.100.
Galley, Richard A.: *See—*
Bryant, David R.; and Galley, Richard A., 4,283,304, Cl. 252-413.000.
Gamebridge, Inc.: *See—*
Bourque, Rene; and Overbaugn, Lorne S., 4,282,659, Cl. 36-121.000.
Gandy, Gerald C.: *See—*
Farnsworth, Gary V.; Gandy, Gerald C.; and Richards, Hugh W., 4,283,476, Cl. 430-140.000.
Ganguly, Ashit K.; Girijavallabhan, Viyyoor M.; Cavender, Patricia; Sarre, Olga; and McCombie, Stuart W., to Schering Corporation. Synthesis of β-lactams having a substituted hydroxymethylene group at the position α to the lactam carbonyl group. 4,283,531, Cl. 544-30.000.
Gard, Roger: *See—*
Deschanels, Francois; and Gard, Roger, 4,283,750, Cl. 361-274.000.
Gardineer, Bayard G.; and Leber, George W., to Technicare Corporation. Transducer drive and control. 4,282,755, Cl. 73-634.000.
Gardineer, Bayard G.; Heringes, James A.; and Mandel, Paul, to Technicare Corporation. Water circulation and maintenance system for an ultrasound mammary scanning apparatus. 4,282,880, Cl. 128-660.000.
Garrett Corporation, The: *See—*
Avant, William W., 4,282,710, Cl. 60-39.28R.
Garrett, Randall M.: *See—*
Hummert, George T.; Garrett, Randall M.; and Schultz, Roy D., 4,283,651, Cl. 310-223.000.
Garson, Jean-Claude: *See—*
Leveque, Jean-Luc; Guiolet, Alain; and Garson, Jean-Claude, 4,283,013, Cl. 239-304.000.
Garwood, William E.; and Silk, Murray R., to Mobil Oil Corporation. Manufacture of hydrocracked low pour lubricating oils. 4,283,271, Cl. 208-59.000.
Garwood, William E.; and Silk, Murray R., to Mobil Oil Corporation. Manufacture of hydrocracked low pour lubricating oils. 4,283,272, Cl. 208-59.000.
Gasman, Robert C.: *See—*
Charles, John J.; and Gasman, Robert C., 4,283,326, Cl. 260-40.00R.
Gathje, John C.: *See—*
Brison, Robert J.; and Gathje, John C., 4,283,277, Cl. 209-166.000.
Gaussens, Gilbert: *See—*
Berthet, Jeanne; and Gaussens, Gilbert, 4,283,325, Cl. 260-37.00M.
Gavrilenko, Vladimir I.: *See—*
Bylinsky, Lev V.; Gavrilenko, Vladimir I.; Glumov, Ivan F.; Denisov, Vasily F.; and Meer, Vadim V., 4,283,763, Cl. 364-449.000.
Gaylord, Norman G.: *See—*
Young, Robert W.; Prussin, Samuel; and Gaylord, Norman G., 4,283,387, Cl. 424-78.000.
Gebr. Bode & Co.: *See—*
Britzke, Ingo; and Horn, Manfred, 4,282,686, Cl. 49-253.000.
Geipel, Henry J., Jr.: *See—*
Fortino, Andres G.; Geipel, Henry J., Jr.; Heller, Lawrence G.; and Silverman, Ronald, 4,282,646, Cl. 29-571.000.
General Electric Company: *See—*
Crivello, James V., 4,283,312, Cl. 260-18.0EP.
Dinger, Edward H., 4,283,667, Cl. 318-356.000.
Liebermann, Howard H., 4,282,921, Cl. 164-463.000.
Mark, Victor, 4,283,566, Cl. 568-726.000.
Orser, David A.; Towlson, Howard E.; and True, Thomas T., 4,283,120, Cl. 350-361.000.
Ryckman, William D., Jr., 4,283,701, Cl. 337-341.000.
Stottmann, Richard L.; and Losert, Gerhard K., 4,282,720, Cl. 62-180.000.
Zarchy, Andrew S., 4,282,741, Cl. 73-23.000.
General Foods Corporation: *See—*
Yuan, Mary W.; and Birney, Sharon R., 4,283,425, Cl. 426-102.000.
General Motors Corporation: *See—*
Holtman, Robert L.; and McClure, Robert B., 4,282,837, Cl. 123-193.00P.
Kopich, Leonard F.; and Steele, James A., 4,282,949, Cl. 180-252.000.
Martyniuk, Ernest T., 4,283,207, Cl. 55-282.000.
Wize, Gary A., 4,283,075, Cl. 280-804.000.
Genest, Leonard J.; and Madenlian, Vache B., to J.S. Lock Company; and Uniqey, S.A. Security system. 4,283,710, Cl. 340-149.00R.
Genrich, Thad J.: *See—*
Bickley, Robert H.; and Genrich, Thad J., 4,283,723, Cl. 340-722.000.
Gentzkow, Wolfgang V.: *See—*
Kleeberg, Wolfgang; Rogler, Wolfgang; Gentzkow, Wolfgang V.; and Rubner, Roland, 4,283,505, Cl. 525-281.000.
Genz, Earl J., to Illinois Tool Works Inc. Electrical keylock switch. 4,283,608, Cl. 200-44.000.
Gerkin, Richard M.: *See—*
Armstrong, George H.; Gerkin, Richard M.; and Critchfield, Frank E., 4,283,500, Cl. 521-137.000.
Gesellchen, Paul D.; and Shuman, Robert T., to Eli Lilly and Company. Pharmacologically active peptides. 4,283,329, Cl. 260-112.50R.
Gewerkschaft Eisenhutte Westfalia: *See—*
Temme, Helmut, 4,282,968, Cl. 198-735.000.
Ghahramani, Iraj: *See—*
Kalotay, Paul Z.; and Ghahramani, Iraj, 4,282,742, Cl. 73-32.00A.
Ghenassia, Elie: *See—*
Jequier, William; Ghenassia, Elie; Fine, Francois; and Krempf, Gerard, 4,283,577, Cl. 568-841.000.
Gibbs, Ronald L., to Dow Chemical Company, The. Support, catalyst and process for polymerizing olefins. 4,283,515, Cl. 526-127.000.
Gibson, Walter G., to RCA Corporation. Signal separation networks. 4,283,741, Cl. 358-197.000.

Gick, Wilhelm: *See—*
Bernhagen, Wolfgang; Bach, Hanswilhelm; Brundin, Eike; Gick, Wilhelm; Springer, Helmut; and Hack, Adolf, 4,283,564, Cl. 568-461.000.

Giesen, Gerardus J., to Metaalgieterij G. Giesen, B.V. Hot-water boiler, for instance a central heating boiler, and a metal casting therefor. 4,282,833, Cl. 122-158.000.

Gijbels, Jozef: *See—*
Gijbels, Peter; and Gijbels, Jozef, 4,283,633, Cl. 290-1.00R.

Gijbels, Peter; and Gijbels, Jozef. Electro-pneumatic dynamo. 4,283,633, Cl. 290-1.00R.

Gillespie, Janice M., executrix: *See—*
Rosback, Donald H., deceased; and Gillespie, Janice M., executrix, 4,283,587, Cl. 585-828.000.

Gillett, Kenneth: *See—*
Daughton, John W.; Gillett, Kenneth; and Nelson, Frank M., 4,283,773, Cl. 364-900.000.

Gillette Company, The: *See—*
Miffitt, Donald C., 4,282,866, Cl. 128-66.000.
Trotta, Robert A., 4,282,650, Cl. 30-47.000.
Trotta, Robert A., 4,282,651, Cl. 30-89.000.

Gillum, Richard R.: *See—*
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Giordano, Flora: *See—*
Giordano, Gene; and Giordano, Flora, 4,283,431, Cl. 426-296.000.

Giordano, Gene; and Giordano, Flora. Method of making a multi-layer pizza type product. 4,283,431, Cl. 426-296.000.

Girg, Friedrich; and Knittel, Volker, to Hoechst Aktiengesellschaft. Process for the preparation and use of stable cellulose ether suspensions. 4,283,229, Cl. 106-171.000.

Girijavallabhan, Viyyoor M.: *See—*
Ganguly, Ashit K.; Girijavallabhan, Viyyoor M.; Cavender, Patricia; Sarre, Olga; and McCombie, Stuart W., 4,283,531, Cl. 544-30.000.

Givens, Steven P.: *See—*
McDonald, Charles J.; Van Landingham, John V.; and Givens, Steven P., 4,282,928, Cl. 166-274.000.

Glade, Gaston M. Advertising poster display frame. 4,282,667, Cl. 40-16.000.

Gladrow, Elroy M., to Exxon Research & Engineering Co. Hydrocarbon conversion catalyst. 4,283,309, Cl. 252-455.00Z.

Glaenzer Spicer: *See—*
Orain, Michel A., 4,282,722, Cl. 64-32.00F.

Glasson, Richard E.; and Lauterbach, Jerre F., to Cummins Engine Company. Viscous fluid clutch. 4,282,960, Cl. 192-58.00C.

Glumov, Ivan F.: *See—*
Bylinsky, Lev V.; Gavrilenko, Vladimir I.; Glumov, Ivan F.; Denisov, Vasily F.; and Meer, Vadim V., 4,283,763, Cl. 364-449.000.

Godfrey, Norman B., to Highland Resources, Inc. Preparation of dioxane and co-products. 4,283,339, Cl. 260-340.600.

Goebel, Franz; and Morgan, Cyril, to GTE Products Corporation. Electrochemical cell insensitive to physical orientation. 4,283,468, Cl. 429-81.000.

Goebel, Franz; and Schlaikjer, Carl R., to GTE Products Corp.; and GTE Laboratories Inc. Integrated electrode/separator structures. 4,283,469, Cl. 429-196.000.

Goebel, Franz: *See—*
Freeman, Roger K.; and Goebel, Franz, 4,283,470, Cl. 429-209.000.

Goetz, Norbert; and Hupfer, Leopold, to BASF Aktiengesellschaft. Reductive alkylation of nitrogen heterocycles. 4,283,534, Cl. 544-174.000.

Goetze AG: *See—*
Feller, Otto; Oepen, Heinz; Kuhl, Manfred; Skrobek, Alois; Bornefeld, Horst; Seiler, Hans G.; and Johann, Walter, 4,282,784, Cl. 82-19.000.

Golben, Peter M., to United States of America, Interior. Metal hydride actuation device. 4,282,931, Cl. 169-61.000.

Gold, Nicholas, to Polaroid Corporation. Method and apparatus for making a self-coiling sheet. 4,283,362, Cl. 264-160.000.

Goldstein, David; Jones, Richard E.; and Sery, Robert S., to United States of America, Navy. Method of modifying the transition temperature range of TiNi base shape memory alloys. 4,283,233, Cl. 148-11.50R.

Goldstein, Joseph. Stretch wrapper for palletized load. 4,282,700, Cl. 53-556.000.

Gompf, Thomas E.; Hammond, Howell A.; and Mooberry, Jared B., to Eastman Kodak Company. Silver halide elements containing blocked pyrazolone magenta dye-forming couplers. 4,283,472, Cl. 430-17.000.

Goodman, Howard M.; Shine, John; and Horst, Peter, to University of California, The Regents of the. Purification of nucleotide sequences suitable for expression in bacteria. 4,283,489, Cl. 435-6.000.

Goody, Roy W. Portable exercise totalizer. 4,283,712, Cl. 340-323.00R.

Goodyear Tire & Rubber Company, The: *See—*
Fontaine, Jean F. L., 4,282,915, Cl. 152-209.00R.
Frech, Kenneth J.; and Tazuma, James J., 4,283,373, Cl. 423-226.000.
Shemenski, Robert M., Sr., 4,283,460, Cl. 428-389.000.

Gorbunov, Andrei T.: *See—*
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Gordon Barlow Design: *See—*
Karlin, Richard A.; Barlow, Gordon A.; and Krutsch, John R., 4,283,049, Cl. 273-38.000.

Gordon, Joseph H.; and Bloch, R. Ramon, to Lampiridae Associates. Exit illuminating system. 4,283,657, Cl. 315-86.000.

Goring Kerr Limited: *See—*
Kerr, Bruce G., 4,283,680, Cl. 324-234.000.

Gorska-Poczopko, Jadwiga: *See—*
Witek, Stanislaw; Grobelny, Damian; Ptaszkowska, Janina; Bielecki, Andrzej; Bakuniak, Edmund; Fulde, Stefan; and Gorska-Poczopko, Jadwiga, 4,283,399, Cl. 424-248.400.

Goser, Karl, to Siemens Aktiengesellschaft. Method and circuit arrangement for the operation of recursive filter circuits or analog storage circuits constructed according to the charge coupled device (CCD) principle. 4,283,696, Cl. 333-165.000.

Gostomski, Arnold R.: *See—*
Gostomski, John J.; Gostomski, Arnold R.; and Dauel, Eugene F., 4,283,073, Cl. 280-508.000.

Gostomski, John J.; Gostomski, Arnold R.; and Dauel, Eugene F., to Atwood Vacuum Machine Company. Ball type gooseneck hitch. 4,283,073, Cl. 280-508.000.

Goto, Genichi; and Hanihara, Sadamasa, to Nippon Electric Co., Ltd. Traveling wave tube devices. 4,283,656, Cl. 315-3.500.

Gotoh, Miyuki, to Nissan Motor Company, Limited. Circuit arrangement for operating heavy-duty equipment using electrical relaying device. 4,283,748, Cl. 361-154.000.

Gould, James S.: *See—*
Gould, Samuel; and Gould, James S., 4,283,101, Cl. 339-2.00L.

Gould, Samuel; and Gould, James S., to Indicator Controls Corp. Rotatable lamp socket for incandescent pedestrian traffic signal, or the like. 4,283,101, Cl. 339-2.00L.

Gourley, Robert N., to Eastman Kodak Company. Azo dyes containing fluorinated carboxylic or sulphonic ester groups on the diazo moiety. 4,283,332, Cl. 260-155.000.

Gowdy, Hugh W.: *See—*
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GR-Stein Refractories Limited: *See—*
Cheetham, Stuart E., 4,282,923, Cl. 165-9.100.

Graessley, William J., to Ford Motor Company. Analog computer circuit for controlling a fuel injection system during engine cranking. 4,283,762, Cl. 364-431.000.

Graf, Ronald E. Droplet control aspects—ink evaporation reduction; low voltage contact angle control device; droplet trajectory release modes; uses for metallic ink drops in circuit wiring and press printing. 4,283,730, Cl. 346-75.000.

Grafe, Werner; and Schlotterer, Willy, to Montanwerke Walter GmbH. Cutting tool with replaceable edge cutting bit. 4,283,163, Cl. 407-104.000.

Graham, David J.; and Armond, John W., to BOC Limited. Treatment of gas streams. 4,283,212, Cl. 62-18.000.

Graham, Johnny R.: *See—*
Graham, Kenneth Z.; and Graham, Johnny R., 4,282,633, Cl. 17-45.000.

Graham, Kenneth Z.; and Graham, Johnny R. Line divider. 4,282,633, Cl. 17-45.000.

Grand Rapids Spring Service Co.: *See—*
Bessey, Robert L., 4,282,945, Cl. 180-71.000.

Grandeur Motorcar Corp.: *See—*
Phillips, Charles W., 4,282,641, Cl. 29-416.000.

Grandinetti, Michael A.: *See—*
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Granlund, John: *See—*
Adams, Robert T.; Ahrens, Paul E.; and Granlund, John, 4,283,602, Cl. 179-1.50R.

Grant, John W., to Du Pont de Nemours, E. I., and Company. Rotor for sedimentation field flow fractionation. 4,283,276, Cl. 209-155.000.

Grawey, Charles E., to Caterpillar Tractor Co. Tire curing method. 4,283,366, Cl. 264-502.000.

Great Lakes Carbon Corporation: *See—*
Horne, Ottis J., Jr.; and Ramsey, David E., Jr., 4,283,375, Cl. 423-345.000.

Greaves, Jeffrey C.: *See—*
Chandra, Bala P.; Greaves, Jeffrey C.; and Lovelock, Victor G., 4,283,526, Cl. 528-500.000.

Green, Robert S., to National Semiconductor Corporation. Regulation of current through depletion devices in a MOS integrated circuit. 4,283,642, Cl. 307-297.000.

Greene, Frederick C.: *See—*
Demrick, Carl J.; and Greene, Frederick C., 4,282,629, Cl. 16-43.000.

Greene, Gordon A.: *See—*
Menz, Fredric L.; and Greene, Gordon A., 4,282,814, Cl. 102-318.000.

Greene, Janice L., to Standard Oil Company, The. Process for polymerization of composition comprising (1) alpha,beta-unsaturated monocarboxylic acid or ammonium salt thereof and (2) ammonia. 4,283,524, Cl. 528-363.000.

Greenwood, Sydney H. J., to Exxon Research & Engineering Co. Process for the production of a feedstock for carbon artifact manufacture. 4,283,269, Cl. 208-45.000.

Griebeler, Elmer L., to C-R-O, Inc. Compound oscillator. 4,282,763, Cl. 74-89.150.

Griffin, Raymond H.: *See*—
Bauer, William A.; Frohlich, Charles R., Jr.; Griffin, Raymond H.; and Henderson, Joseph G., 4,283,020, Cl. 242-25.00R.
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Cohn, Alan R., 4,282,757, Cl. 73-714.000.
Grubb, Lawrence B.; Simpson, Danny E.; Hoffman, Louis S.; and Williams, David M., to Johnson & Johnson Baby Products Company. Infant's toy—rattle and peek-a-boo ball. 4,282,679, Cl. 46-193.000.
Grube, William L., to MacLean-Fogg Company. Railroad hand brake with spring clutch. 4,282,771, Cl. 74-505.000.
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Freeman, Roger K.; and Goebel, Franz, 4,283,470, Cl. 429-209.000.
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Vanderpool, Clarence D.; and MacInnis, Martin B., 4,283,257, Cl. 204-86.000.
Vanderpool, Clarence D.; and McClintic, Robert P., 4,283,258, Cl. 204-102.000.
GTE Sylvania Wiring Devices Inc.: *See*—
Anthony, Walter, 4,283,107, Cl. 339-147.00R.
Guichard, Roland R., to Societe pour l'Equipement de Vehicules. Reduction gear. 4,282,767, Cl. 74-427.000.
Guiolet, Alain: *See*—
Leveque, Jean-Luc; Guiolet, Alain; and Garson, Jean-Claude, 4,283,013, Cl. 239-304.000.
Gujer, Peter, to Rieter Machine Works, Ltd. Lacer arm for a winding machine. 4,283,019, Cl. 242-18.00A.
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Chow, Wai Y.; Hurley, Daniel J.; Rea, James H.; and Thackaberry, S. Paul, 4,283,551, Cl. 560-86.000.
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Gurov, Evgeny I.: *See*—
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H. Krantz GmbH & Co.: *See*—
Cramer, Hans, 4,282,636, Cl. 26-91.000.
Haas, Armand: *See*—
Dalens, Marcel; and Haas, Armand, 4,282,682, Cl. 47-9.000.
Haataja, Bruce A.: *See*—
Kilpela, Tauno B.; and Haataja, Bruce A., 4,282,910, Cl. 144-3.00K.
Habermehl, Adolf; and Ridder, Hans-Werner, to Habermehl, Adolf. Method and apparatus for testing materials such as disease in living trees. 4,283,629, Cl. 250-445.00T.
Hack, Adolf: *See*—
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Capps, Spencer W.; Hagler, Gerald E.; and Abhiraman, Agaram S., 4,283,364, Cl. 264-176.00F.
Hale, Timothy E.: *See*—
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Hallenbeck, Norman P.; and Willard, Stephen F., to N. P. Halenbeck Company. Geared power amplification unit for presses. 4,282,739, Cl. 72-449.000.
Halter, Matthew R., to Watteredge-Uniflex, Inc. Cable condition analyzing system for electric arc furnace conductors. 4,283,678, Cl. 324-140.00R.
Hamaguti, Takashi: *See*—
Kaji, Hisatsugu; Kameyama, Iwawo; Hamaguti, Takashi; and Miyamori, Tamotsu, 4,283,369, Cl. 422-193.000.
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Hamashima, Yoshio: *See*—
Yoshioka, Mitsuru; Hamashima, Yoshio; and Nagata, Wataru, 4,283,333, Cl. 260-239.00A.
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Hanazono, Masami; Watanabe, Tomoyoshi; Nakai, Toshio; Kuzuya, Susumu; Asai, Akira; Iwase, Takayuki; Nakamura, Kazuo; and Onoda, Hiroshi, to Brother Kogyo Kaisha. Typewriter. 4,283,150, Cl. 400-666.000.
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Teague, Edward W.; Hance, Max H.; and Neal, Carl R., 4,283,194, Cl. 8-494.000.
Handte, Herbert; and Kollmar, Friedrich, to MOOG GmbH. Signal generator. 4,283,637, Cl. 307-228.000.
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Basch, Walter E.; and Haney, John W., 4,282,801, Cl. 92-102.000.
Hanihara, Sadamasa: *See*—
Goto, Genichi; and Hanihara, Sadamasa, 4,283,656, Cl. 315-3.500.
Hannah, John, to Merck & Co., Inc. 7-N-Heterocyclyl cephalosporins and antibiotic pharmaceutical compositions containing them. 4,283,397, Cl. 424-246.000.
Hannah, John, to Merck & Co., Inc. 6-N-Heterocyclyl-3-tetrazolylpenicillins. 4,283,402, Cl. 424-256.000.
Hansen, Poul E.; and Dyhr, Jan, to Danfoss A/S. Brushless electric motor. 4,283,646, Cl. 310-126.000.
Hansen, Rob R.: *See*—
Roach, Sally A.; and Hansen, Rob R., 4,282,721, Cl. 63-14.00R.
Hanson, Chris A.; and Henderson, George S., to Hanson Industries Incorporated. Anti-bowing form fitting boot. 4,282,658, Cl. 36-121.000.
Hanson, Chris A., to Hanson Industries Incorporated. Leg-size adjusting form fitting boot. 4,282,660, Cl. 36-121.000.
Hanson, Harold W., to Par-way Mfg. Co. Self-cleaning nozzle construction for product enrobing apparatus. 4,283,012, Cl. 239-118.000.
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Hanson, Chris A.; and Henderson, George S., 4,282,658, Cl. 36-121.000.
Hanson, Chris A., 4,282,660, Cl. 36-121.000.
Hanson, Lowell R.: *See*—
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Hanson, Steven P.; Schoenfield, Palmer J.; and Disko, Harry, to Marvin Glass & Associates. Toy cash register. 4,282,674, Cl. 46-39.000.
Hara, Hajime: *See*—
Omika, Hiroyoshi; Hara, Hajime; Otsuki, Yutaka; Araki, Yoshihiko; and Aoyama, Kazuho, 4,283,313, Cl. 260-18.0EP.
Harada, Setsuo; and Yokooku, Katsuhiko, to Toyo Kogyo Co., Ltd. Radial flow catalytic converter. 4,283,368, Cl. 422-181.000.
Harbert, Charles A.: *See*—
Althuis, Thomas H.; Harbert, Charles A.; Johnson, Michael R.; and Melvin, Lawrence S., Jr., 4,283,569, Cl. 568-764.000.
Harmon, James L.; and Junck, John A., to Caterpillar Tractor Co. Flow metering valve with operator selectable boosted flow. 4,282,898, Cl. 137-596.130.
Harney, Donald W. G.; Lehman, Peter G.; and Rundle, Joseph C., to ICI Australia Limited. Pesticidal fluorinated esters of the pyrethrin or pyrethroid type. 4,283,414, Cl. 424-304.000.
Harper, George C., Jr., to Pittsburgh-Des Moines Steel Company. Joint for space frames. 4,283,156, Cl. 403-218.000.
Harris, Bernard, to Rexnord Inc. Rotary to linear actuator and method of making the same. 4,282,764, Cl. 74-89.150.
Harris Corporation: *See*—
Bartlett, Homer E., 4,283,728, Cl. 343-781.0CA.
Sirsi, Ramesh M., 4,283,236, Cl. 148-187.000.
Harris, Paul A.: *See*—
Williams, David G.; and Harris, Paul A., 4,283,719, Cl. 340-620.000.
Harrison, Reginald, to Dunlop Limited. Elastomeric railway suspension. 4,282,816, Cl. 105-224.100.
Hartkorn, Alfred. Joint bridging construction for bridges or like structures. 4,282,620, Cl. 14-16.500.
Hartmann, Hans S., to Du Pont de Nemours, E. I., and Company. Lead coated alumina fiber and lead matrix composites thereof. 4,282,922, Cl. 164-97.000.
Harwood, Richard J.: *See*—
Field, Arthur K.; and Harwood, Richard J., 4,283,393, Cl. 424-180.000.
Hascoe, Norman. Prefabricated composite metallic heat-transmitting plate unit. 4,283,464, Cl. 428-594.000.
Hasegawa, Yoshio: *See*—
Yajima, Seishi; Okamura, Kiyohito; and Hasegawa, Yoshio, 4,283,376, Cl. 423-345.000.
Hashimoto, Tsuguo: *See*—
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Hashizume, Hikaru: *See*—
Obayashi, Nobuharu; Hashizume, Hikaru; Kameyama, Seiji; Ezawa, Sadaaki; Kondo, Tatsunori; Takauji, Kiyomi; and Aoyama, Tohru, 4,282,785, Cl. 84-1.010.

Hashmi, Tas, to Sherwood Medical Industries Inc. Method of making fabric-lined articles. 4,283,244, Cl. 156-242.000.

Hattori, Shuzo; and Morita, Shinzo, to Nihon Shinku Gijutsu Kabushiki Kaisha. Dry Lithographic Process. 4,283,482, Cl. 430-296.000.

Hauni-Werke Korber & Co. KG: *See*—
Dahlgrun, Rolf, 4,282,889, Cl. 131-281.000.

Havens Steel Company: *See*—
Rooney, Craig E., 4,282,619, Cl. 14-6.000.

Hay, Lloyd F.; Rica, Albert F.; and Webber, J. R., to FranRica Mfg. Inc. Scraped surface heat exchanger. 4,282,925, Cl. 165-94.000.

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Kimura, Shigeo; Kamiya, Tadashi; and Hayashi, Kiyotaka, 4,283,706, Cl. 340-58.000.

Haynes, John L., to Becton Dickinson & Company. Valve apparatus for simultaneous control of a plurality of fluid paths. 4,282,902, Cl. 137-636.100.

Hayward, Norman G. Solar heater. 4,282,859, Cl. 126-428.000.

Hazard, Robert E., to Polytop Corporation. Dispensing closure seals. 4,282,991, Cl. 222-531.000.

Heed, Bjorn: *See*—
Abrahamson, Carl-Hugo; and Heed, Bjorn, 4,283,250, Cl. 159-9.00R.

Hegner, Gunter: *See*—
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Heidelberger Druckmaschinen AG: *See*—
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Meyer, Juergen; and Schaaf, Norbert, 4,283,702, Cl. 338-15.000.

Heinbockel, Wolfgang; Siewert, Wolfgang; Kahmann, Albrecht; and Lambrecht, Gerhard, to Escher Wyss GmbH. Apparatus for processing waste paper. 4,283,275, Cl. 209-3.000.

Heinouchi, Yoshiaki, to Murata Manufacturing Co., Ltd. Piezoelectric ultrasonic transducer with resonator laminate. 4,283,649, Cl. 310-324.000.

Held, Kurt. Continuous laminating machine. 4,283,246, Cl. 156-555.000.

Helfgott, Samson: *See*—
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Heller, Lawrence G.: *See*—
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Henderson, George S.: *See*—
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Henke, Ulrich; and Baumgartner, Hans, to Pierburg GmbH & Co. KG. Rate-of-use fuel consumption indicator for combustion engines. 4,282,746, Cl. 73-114.000.

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Henmi, Ichiro; Noda, Akinori; and Ono, Takuro, to Asahi Glass Company, Ltd. Process for producing molded ceramic or metal. 4,283,360, Cl. 264-63.000.

Hennig, Kurt: *See*—
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Herbert Schwind GmbH & Co. KG: *See*—
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Herd, William H., Jr.; Curtis, Stanley F.; Mullican, Vernon T.; and Jones, Robert W., to Pollution Controls Industries, Inc. Carburetor. 4,283,355, Cl. 261-44.00F.

Herder N.V.: *See*—
Demrick, Carl J.; and Greene, Frederick C., 4,282,629, Cl. 16-43.000.
McCarroll, Raymond A., 4,282,628, Cl. 16-18.00A.

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Heringes, James A.: *See*—
Gardineer, Bayard G.; Heringes, James A.; and Mandel, Paul, 4,282,880, Cl. 128-660.000.

Herkes, Frank E., to Du Pont de Nemours, E. I., and Company. Crystalline silica and use in alkylation of aromatics. 4,283,306, Cl. 252-432.000.

Herledan, Jean R., to Compagnie Industrielle des Telecommunications Cit-Alcatel. Apparatus for monitoring the operation of electronic equipment. 4,283,720, Cl. 340-653.000.

Herr, John A.; and Jaffe, Wolfgang, to Singer Company, The. Annular segment permanent magnet single air gap electric motor. 4,283,647, Cl. 310-154.000.

Herrod, Don W.: *See*—
Swift, William R.; Herrod, Don W.; and Marsh, James M., 4,283,136, Cl. 355-45.000.

Herron, Jake, Jr.: *See*—
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Hess, Hans-Jurgen E.: *See*—
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Hetesi, Zoltan: *See*—
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Hewig, Gert: *See*—
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Hewlett-Packard Company: *See*—
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Heymes, Rene; and Lutz, Andre, to Roussel Uclaf. 3-Acetoxymethyl-7-(hydroxyiminoacetamido)-cephalosporanic acid derivatives. 4,283,396, Cl. 424-246.000.

Heyneman, Guido: *See*—
De Steur, Hubert; Vandenbossche, Chris; and Heyneman, Guido, 4,283,142, Cl. 356-319.000.

Hibbard, George A., to Joy Manufacturing Company. Hammer. 4,282,937, Cl. 173-1.000.

Higashinakagawa, Iwao; Sima, Syohei; and Moriya, Takahiko, to VISI Technology Research Association. Method of manufacturing a semiconductor device by forming a tungsten silicide or molybdenum silicide electrode. 4,283,439, Cl. 427-89.000.

Highland Resources, Inc.: *See*—
Godfrey, Norman B., 4,283,339, Cl. 260-340.600.

Hikoaki, Sugimoto: *See*—
Kazuomi, Yamamura; Takasuke, Fukui; Yoshinao, Iwamoto; Yuichi, Shirasaki; Masayuki, Fujise; Hikoaki, Sugimoto; Kikuo, Shirai; and Minoru, Yoshida, 4,283,681, Cl. 324-326.000.

Hildebrand, Dietrich, to Bayer Aktiengesellschaft. Process for dyeing cellulose materials with reactive dyestuffs by the exhaustion method. 4,283,193, Cl. 8-400.000.

Hill, Charlie H., Jr.: *See*—
Bok, Dennis E.; Bridge, Patrick E.; Coulter, Robert W.; Denlinger, George W.; Fernalld, Clifford S., Jr.; Hill, Charlie H., Jr.; Huliba, David A.; Meckstroth, James R.; and Scranton, Robert J., 4,283,731, Cl. 346-75.000.

Hill, John O. Rewinder device. 4,282,954, Cl. 191-12.400.

Hilliard, Raymond C. Wheel carrier assembly. 4,282,994, Cl. 224-42.060.

Hiraga, Masaharu, to Sankyo Electric Company, Limited. Fluid suction and discharge apparatus. 4,283,166, Cl. 417-269.000.

Hirai, Hiroyuki; Matsushita, Sachio; Tsuyuki, Isao; and Watase, Kazumi, to Fuji Photo Film Co., Ltd. Method and apparatus for controlling halogen ion concentration in a photographic processing solution. 4,283,266, Cl. 204-263.000.

Hirao, Mamoru, to Kagaku Kenkyujo Kabushiki Kaisha Hayashibara Seibutsu. Apparatus to prevent leakage of liquid. 4,283,065, Cl. 277-135.000.

Hirata, Yasufumi; Yanagisawa, Isao; Ishii, Yoshio; Tsukamoto, Shinichi; Ito, Noriki; Isomura, Yasuo; and Takeda, Masaaki, to Yamanouchi Pharmaceutical Co., Ltd. Guanidinothiazole compounds, process for preparation and gastric inhibiting compositions containing them. 4,283,408, Cl. 424-270.000.

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Hirowatari, Noriyuki: *See*—
Nakagawa, Hiroaki; Hirowatari, Noriyuki; and Nakamura, Takayuki, 4,283,570, Cl. 568-768.000.

Hirsch, Arthur E., to J. I. Case Company. Protective fluid system. 4,282,797, Cl. 91-1.000.

Hirshaut, Yashar, to Helfgott, Samson; and Benjamin, Jack W., part interest to each. Microbiological systems. 4,283,497, Cl. 435-289.000.

Hisamatsu, Takashi: *See*—
Ezaki, Norio; Miyadoh, Shinji; Ogawa, Yasuaki; Hisamatsu, Takashi; Fukuyashu, Harumi; and Yamada, Yujiro, 4,283,389, Cl. 424-116.000.

Hischmann Technik AG: *See*—
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Hitachi Chemical Company, Ltd.: *See*—
Konii, Susumu; Sase, Shigeo; Yoshida, Masatoshi; Kuroda, Shoei; and Sumi, Takeshi, 4,283,319, Cl. 260-29.300.
Takahashi, Akio; Itoh, Yutaka; Wajima, Motoyo; Morishita, Hirosada; and Tsukanishi, Kenji, 4,283,522, Cl. 528-170.000.

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Akitomo, Nobuo; and Tohyama, Shigeo, 4,283,732, Cl. 346-112.000.
Fukui, Yutaka; and Kagohara, Hiromi, 4,283,234, Cl. 148-32.500.
Isakozawa, Shigeto; and Shii, Kazuo, 4,283,627, Cl. 250-311.000.
Izumita, Morishi; Umemoto, Masuo; Sato, Kazuhiro; Akiyama, Toshiyuki; Takahashi, Kenji; and Nagahara, Shusaku, 4,283,742, Cl. 358-213.000.
Kita, Yuzo; Yamaguchi, Noboru; Shibukawa, Masaru; and Minorikawa, Kazuo, 4,283,760, Cl. 364-200.000.
Kominami, Yasuo; Yamamura, Masahiro; Mizumoto, Katsuji; and Hanada, Toshihide, 4,283,674, Cl. 323-313.000.
Kuribayashi, Tetsuzo; and Hashimoto, Tsuguo, 4,282,708, Cl. 60-39.020.
Miyauchi, Toshimitsu; and Tsunoda, Yoshito, 4,283,785, Cl. 369-116.000.
Nagatomo, Hiroto; Takagaki, Tetsuya; Seki, Hisao; Terasaki, Shirou; and Horimuki, Hitoshi, 4,282,825, Cl. 118-58.000.
Nakajima, Akira; Ichikawa, Akira; and Nakata, Kazuo, 4,283,601, Cl. 179-1.0SD.
Sasayama, Takao, 4,282,842, Cl. 123-440.000.

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Hock, John W.: *See*—
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Hoechst Aktiengesellschaft: *See*—
Becker, Reinhold; and Michel, Wolfgang, 4,282,904, Cl. 138-109.000.
Girg, Friedrich; and Knittel, Volker, 4,283,229, Cl. 106-171.000.
Knorr, Harald; Maier, Thomas; Mildenberger, Hilmar; and Korbanka, Helmut, 4,283,545, Cl. 548-262.000.
Peters, Heinrich; and Surma, Erich, 4,283,297, Cl. 252-70.000.
Schenk, Harald; Winter, Hermann; and Spietschka, Walter, 4,283,426, Cl. 426-105.000.
Siefried, Walter; Janocha, Siegfried; and Crass, Gunther, 4,283,453, Cl. 428-212.000.
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Hoffman, Louis S.: *See*—
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Hoffman, Michael R.: *See*—
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Hoffmann-La Roche Inc.: *See*—
Broger, Emil A.; Crameri, Yvo; Leuenberger, Hans G. W.; Widmer, Erich; and Zell, Reinhard, 4,283,559, Cl. 568-11.000.
Liu, Chao-Min; and Westley, John, 4,283,493, Cl. 435-119.000.
Hofmann, Horst, to Siemens Aktiengesellschaft. Method of producing spacing elements for electro-optical display devices and such display devices. 4,283,119, Cl. 350-344.000.
Hofmann, Kurt H. Electrical drive motor, in particular for water pumps in the field of aquaria. 4,283,645, Cl. 310-87.000.
Hogenkamp, Wilhelm; and Wostbrock, Gert, to Otto Hansel GmbH. Article transfer device. 4,282,964, Cl. 198-358.000.
Holger Reeh: *See*—
Jakob, Franz, 4,283,618, Cl. 219-130.500.
Holland, Kenneth B. D., to James Howden and Company Australia Pty. Limited. Cooling of fluid streams. 4,282,926, Cl. 165-1.000.
Hollister, Kenneth R.: *See*—
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Hollmann, Josef G., to Hischmann Technik AG. Method of producing a tire for a pneumatic tire arrangement. 4,283,241, Cl. 156-117.000.
Holm, Boris, to Aktiebolaget Bofors. Method of producing alkandiol-diaminobenzoates. 4,283,549, Cl. 560-50.000.
Holtman, Robert L.; and McClure, Robert B., to General Motors Corporation. Two-cycle diesel engine with piston ring stabilizing accumulator volume. 4,282,837, Cl. 123-193.00P.
Holzinger, Otto, to Robert Bosch GmbH. System for registering operating parameters of internal combustion engines. 4,282,747, Cl. 73-116.000.
Honda Giken Kogyo Kabushiki Kaisha: *See*—
Kimura, Shigeo; Kamiya, Tadashi; and Hayashi, Kiyotaka, 4,283,706, Cl. 340-58.000.
Honeywell Inc.: *See*—
Balmer, Alden M., 4,283,635, Cl. 307-35.000.
Kompelien, Arlon D., 4,283,638, Cl. 307-580.000.
Hong, Chung I.: *See*—
West, Charles R.; and Hong, Chung I., 4,283,394, Cl. 424-182.000.
Hong, Enrique: *See*—
Schut, Robert N.; Safdy, Max E.; and Hong, Enrique, 4,283,336, Cl. 260-326.14R.
Schut, Robert N.; Safdy, Max E.; and Hong, Enrique, 4,283,410, Cl. 424-274.000.
Hongu, Masayuki; Ohmuro, Shigeru; and Tokuhara, Masaharu, to Sony Corporation. Automatic fine tuning circuit. 4,283,792, Cl. 455-192.000.
Hooker Chemicals & Plastics Corp.: *See*—
Darling, Richard D.; and Lazarz, Christine A., 4,283,264, Cl. 204-252.000.
Dexter, Theodore H.; and Fuller, Willard A., 4,283,287, Cl. 252-187.00R.
Salee, Gideon; and Rosenfeld, Jerold C., 4,283,523, Cl. 528-176.000.
Horan, Douglas F., to Timex Corporation. Multiple time zone, alarm and user programmable custom watch. 4,283,784, Cl. 368-87.000.
Hori, Haruo: *See*—
Uehara, Takeo; and Hori, Haruo, 4,282,631, Cl. 16-102.000.
Horide, Fumio; and Tsuji, Kozo, to Sumitomo Chemical Company, Limited. Emulsifiable concentrate for weed control. 4,283,222, Cl. 71-120.000.
Horimuki, Hitoshi: *See*—
Nagatomo, Hiroto; Takagaki, Tetsuya; Seki, Hisao; Terasaki, Shirou; and Horimuki, Hitoshi, 4,282,825, Cl. 118-58.000.
Horn, Manfred: *See*—
Britzke, Ingo; and Horn, Manfred, 4,282,686, Cl. 49-253.000.
Horne, Ottis J., Jr.; and Ramsey, David E., Jr., to Great Lakes Carbon Corporation. Production of SiC whiskers. 4,283,375, Cl. 423-345.000.
Horst, Peter: *See*—
Goodman, Howard M.; Shine, John; and Horst, Peter, 4,283,489, Cl. 435-6.000.
Horwitt, Laurence G., to Sun Chemical Corporation. Vibration-resistant probe-like electrical heaters. 4,283,703, Cl. 338-34.000.
Hoshiyama, Satoshi: *See*—
Yoshimura, Masahito; Hoshiyama, Satoshi; Takamatsu, Hideki; Kobayashi, Hiroshi; and Takigawa, Shinichiro, 4,283,586, Cl. 585-512.000.
Hosoda, Junzi: *See*—
Imanaka, Hiroshi; Hosoda, Junzi; Jomon, Kazuyoshi; Sakai, Heiichi; Ueda, Ikuo; and Morino, Daizou, 4,283,492, Cl. 435-47.000.
Hosoe, Kazuya: *See*—
Tsunekawa, Tokuichi; Masunaga, Makoto; Hosoe, Kazuya; Niwa, Yukichi; Owada, Mitsutoshi; and Asano, Noriyuki, 4,283,137, Cl. 356-4.000.
Hotta, Hisashi: *See*—
Kitamura, Yoichi; Hotta, Hisashi; and Ito, Makoto, 4,282,981, Cl. 220-75.000.
Hottinger Baldwin Measurements, Inc.: *See*—
Lockery, Harry E.; and Laimins, Eric, 4,282,748, Cl. 73-862.660.
Howard, Peter; and Weetman, David, to Ricardo Consulting Engineers Limited. Method and apparatus for measuring the strength of the air/fuel mixture supplied e.g. to an I.C. engine. 4,283,256, Cl. 204-1.00T.
Howell, Carl J., Jr.; Trott, David W.; and Riley, Jesse L., to Celanese Corporation. Open cell structure foamed cellulose acetate filters. 4,282,890, Cl. 131-332.000.
Howell, James D.: *See*—
Maus, L. Donald; Speers, Jerry M.; and Howell, James D., 4,282,939, Cl. 175-7.000.
Howell, Thomas J., to Rohm and Haas Company. Resins. 4,283,499, Cl. 521-38.000.
Hsia, Lih M.: *See*—
Yang, An T.; and Hsia, Lih M., 4,282,778, Cl. 74-820.000.
Hsin, Chung-Herng: *See*—
Schwartz, Sidney J.; Quadri, Farooq M.; and Hsin, Chung-Herng, 4,283,774, Cl. 365-8.000.
Hubel, Werner: *See*—
Disteldorf, Josef; Hubel, Werner; and Wolf, Elmar, 4,283,535, Cl. 544-193.000.
Huber, Rudolf, to Hoerbiger Ventilwerke Aktiengesellschaft. Adjusting mechanism for regulating devices. 4,282,766, Cl. 74-424.8VA.
Huff, Lloyd; and Fusek, Richard L. Method and apparatus for making wide exit pupil viewable holograms. 4,283,109, Cl. 350-3.760.
Hughes Aircraft Company: *See*—
Coane, Philip J., 4,283,483, Cl. 430-296.000.
Hughes, Mark F., to Motorola, Inc. Portable device with housing for battery and plug-in module. 4,283,796, Cl. 455-349.000.
Hughes, Richard L.: *See*—
Ferrill, Jess B.; Hughes, Richard L.; and Soderstrom, Melvin A., 4,283,105, Cl. 339-97.00R.
Hulber, Clarence E., Jr., to Williams, Burch I.; and Malouf, B. J., part interest to each. Apparatus for facilitating flow of solid particles by gravity through a container having an opening in the bottom thereof. 4,282,988, Cl. 222-184.000.
Hulett, Robert L. Scraping tool for cleaning cooking grills. 4,282,625, Cl. 15-236.00R.
Huliba, David A.: *See*—
Bok, Dennis E.; Bridge, Patrick E.; Coulter, Robert W.; Denlinger, George W.; Fernalld, Clifford S., Jr.; Hill, Charlie H., Jr.; Huliba, David A.; Meckstroth, James R.; and Scranton, Robert J., 4,283,731, Cl. 346-75.000.
Humlong, Robert F., to Wald Manufacturing Co., Inc. Quick release bicycle basket and carrier rack therefor. 4,282,993, Cl. 224-31.000.
Hummert, George T.; Garrett, Randall M.; and Schultz, Roy D., to Westinghouse Electric Corp. Switching circuit for high current brushes in a dynamoelectric machine. 4,283,651, Cl. 310-223.000.
Hung, William M.: *See*—
Schmidt, Paul J.; and Hung, William M., 4,283,077, Cl. 282-27.500.
Hupfer, Leopold: *See*—
Goetz, Norbert; and Hupfer, Leopold, 4,283,534, Cl. 544-174.000.
Hurley, Daniel J.: *See*—
Chow, Wai Y.; Hurley, Daniel J.; Rea, James H.; and Thackaberry, S. Paul, 4,283,551, Cl. 560-86.000.
Hurst, Howard B. Table for use with end-for-end rotatable hospital bed. 4,282,614, Cl. 5-507.000.
Hurst, Ronald C.: *See*—
Yates, Barrie J.; and Hurst, Ronald C., 4,283,378, Cl. 423-456.000.
Huyck Corporation: *See*—
Kolsky, Rodger E.; and Naar, Raymond Z., 4,283,457, Cl. 428-285.000.
Ichikawa, Akira: *See*—
Nakajima, Akira; Ichikawa, Akira; and Nakata, Kazuo, 4,283,601, Cl. 179-1.0SD.
ICI Australia Limited: *See*—
Harney, Donald W. G.; Lehman, Peter G.; and Rundle, Joseph C., 4,283,414, Cl. 424-304.000.
Ideal Toy Corporation: *See*—
Davis, Robert E., 4,282,676, Cl. 46-118.000.
Igarashi, Akira; and Sato, Kozo, to Fuji Photo Film Co., Ltd. Heat-sensitive recording paper containing a novel electron accepting compound. 4,283,458, Cl. 428-341.000.
Igarashi, Kazuo: *See*—
Kito, Miyoshi; and Igarashi, Kazuo, 4,283,722, Cl. 340-685.000.
Ii, Akira: *See*—
Yamada, Kenji; Takata, Akira; Ii, Akira; and Ohiwa, Katsuhiko, 4,282,840, Cl. 123-412.000.
Iino, Yousuke: *See*—
Yamasaki, Koyu; and Iino, Yousuke, 4,282,643, Cl. 29-527.200.
Iio, Junji: *See*—
Yamaga, Eiichi; Iio, Junji; Takeda, Toshio; Nakada, Akira; and Imamura, Akio, 4,282,788, Cl. 84-1.030.
Ikeda Mohando Co., Ltd.: *See*—
Nohara, Fujio, 4,283,532, Cl. 544-165.000.

Ikeda, Takayoshi: *See—*
Nakagawa, Seiichi; and Ikeda, Takayoshi, 4,283,632, Cl. 250-503.000.

Ikuta, Yasuhiro; and Matsuo, Masashi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Exhaust gas recirculation system for internal combustion engine. 4,282,847, Cl. 123-568.000.

Illinois Tool Works Inc.: *See—*
Genz, Earl J., 4,283,608, Cl. 200-44.000.

Ima, Seiichiro: *See—*
Shiga, Akinobu; Matsuyama, Kiyoshi; Kakugo, Masahiro; Naito, Yukio; and Ima, Seiichiro, 4,283,463, Cl. 428-512.000.

Imamura, Akio: *See—*
Yamaga, Eiichi; Iio, Junji; Takeda, Toshio; Nakada, Akira; and Imamura, Akio, 4,282,788, Cl. 84-1.030.

Imanaka, Hiroshi; Hosoda, Junzi; Jomon, Kazuyoshi; Sakai, Heiichi; Ueda, Ikuo; and Morino, Daizou, to Fujisawa Pharmaceutical Co., Ltd. Production of antibiotics WS-3442 A, B, C, D and E, and their acyl derivatives. 4,283,492, Cl. 435-47.000.

Imbusch, Heinrich: *See—*
Drescher, Heinz; Imbusch, Heinrich; and Lampe, Hans H., 4,283,620, Cl. 235-92.0SH.

Imperial Chemical Industries Limited: *See—*
Byrd, Geoffrey C. M., 4,283,265, Cl. 204-252.000.
Chandra, Bala P.; Greaves, Jeffrey C.; and Lovelock, Victor G., 4,283,526, Cl. 528-500.000.
Ramshaw, Colin; and Mallinson, Roger H., 4,283,255, Cl. 203-49.000.

Indesit Industria Elettrodomestici Italiana S.p.A.: *See—*
Farina, Attilio, 4,283,791, Cl. 455-183.000.

Indicator Controls Corp.: *See—*
Gould, Samuel; and Gould, James S., 4,283,101, Cl. 339-2.00L.

Industria Espanola de Manufacturas Especiales, S.A. (IEMESA): *See—*
Miro, Juan C., 4,282,956, Cl. 192-4.00R.

Industrie Pirelli S.p.A.: *See—*
Mirabelli, Bruno, 4,283,263, Cl. 204-219.000.

Inglish, David S.: *See—*
Snyder, R. David; Iwerks, Donald W.; Otto, Robert R.; Richardson, Lee R.; and Inglish, David S., 4,283,766, Cl. 364-525.000.

Ingram, Gary L., to Spencer Wright Industries, Inc. Motion transfer apparatus for tufting machines. 4,282,818, Cl. 112-79.00R.

Inokuchi, Nobuyuki: *See—*
Matsunami, Muneharu; Saito, Toshio; Yoshida, Akio; and Inokuchi, Nobuyuki, 4,283,076, Cl. 280-806.000.

Inoue, Chozo; and Moriguchi, Soyao, to Showa Denko Kabushiki Kaisha. Process for production of β-chloroalanine. 4,283,554, Cl. 562-574.000.

Inoue, Yukihiro, to Sharp Kabushiki Kaisha. Liquid crystal display with a substrate carrying display electrodes and integrated circuit chip connected thereto. 4,283,118, Cl. 350-334.000.

Insler man, Hans E.: *See—*
Buser, Rudolf G.; and Insler man, Hans E., 4,283,749, Cl. 361-218.000.

Institoris, Laszlo: *See—*
Szabo, Tibor; Institoris, Laszlo; Kovacs, Gabor; Stadler, Istvan; and Koszegi, Bela, 4,283,413, Cl. 424-285.000.

Institut Francais du Petrole: *See—*
Chauvin, Yves; Commereuc, Dominique; Gaillard, Jean; Leger, Gerard; and Phung, Nhu Hung, 4,283,305, Cl. 252-431.00C.

Instrumentation Laboratory Inc.: *See—*
Cormier, Alan D.; Webster, Milo E.; Czaban, John D.; Silverman, Neil D.; and Noble, Lynn W., 4,283,262, Cl. 204-195.00M.

Intel Corporation: *See—*
Yu, Kenneth K.; Bohr, Mark T.; and Seidenfeld, Mark B., 4,282,648, Cl. 29-571.000.

Intermountain Research and Devel. Corp.: *See—*
Frint, William R.; Copenhafer, William C.; and Pinsky, Michael L., 4,283,372, Cl. 423-206.00T.

International Business Machines Corporation: *See—*
Ainscow, Frank; and Anwyl, Edward D., 4,283,662, Cl. 315-364.000.
Chang, Hsu, 4,283,771, Cl. 364-900.000.
Cohen, Mitchell S., 4,283,775, Cl. 365-32.000.
Drescher, Heinz; Imbusch, Heinrich; and Lampe, Hans H., 4,283,620, Cl. 235-92.0SH.
Ephrath, Linda M., 4,283,249, Cl. 156-643.000.
Fortino, Andres G.; Geipel, Henry J., Jr.; Heller, Lawrence G.; and Silverman, Ronald, 4,282,646, Cl. 29-571.000.
Konian, Richard R.; and Walsh, James L., 4,283,640, Cl. 307-270.000.
Melcher, Robert L.; Romankiw, Lubomyr T.; and von Gutfeld, Robert J., 4,283,259, Cl. 204-129.300.
Monrolin, Jean L.; and Vachee, Pierre, 4,283,789, Cl. 375-55.000.

International Flavors & Fragrances Inc.: *See—*
Sprecker, Mark A.; Schmitt, Frederick L.; Vock, Manfred H.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,283,576, Cl. 568-826.000.

International Standard Electric Corporation: *See—*
Drake, Cyril F., 4,283,227, Cl. 106-47.00R.

International Telephone and Telegraph Corporation: *See—*
Adams, Robert T.; Ahrens, Paul E.; and Granlund, John, 4,283,602, Cl. 179-1.50R.
Akers, Francis I.; and Maklad, Mokhtar S., 4,283,213, Cl. 65-3.00A.
Borsuk, Leslie M., 4,283,125, Cl. 350-96.200.
Cooper, James J., Jr., 4,283,597, Cl. 174-138.00F.
Kalotay, Paul Z.; and Ghahramani, Iraj, 4,282,742, Cl. 73-32.00A.

Irving, James H. Encapsulated neon lamps. 4,283,758, Cl. 362-251.000.

Isakozawa, Shigeto; and Shii, Kazuo, to Hitachi, Ltd. Electron microscope. 4,283,627, Cl. 250-311.000.

Ishigaki, Isao: *See—*
Machi, Sueo; Ishigaki, Isao; Sugo, Takanobu; Murata, Kazuo; Tanso, Shiro; and Senoo, Keizi, 4,283,442, Cl. 427-171.000.

Ishii, Yoshio: *See—*
Hirata, Yasufumi; Yanagisawa, Isao; Ishii, Yoshio; Tsukamoto, Shinichi; Ito, Noriki; Isomura, Yasuo; and Takeda, Masaaki, 4,283,408, Cl. 424-270.000.

Ishizaka, Sunao; and Fukuhara, Toru, to Nippon Kogaku K.K. Large aperture ratio interchangeable lens for a single lens reflex camera. 4,283,133, Cl. 354-270.000.

Isibasi, Masayasu: *See—*
Nambu, Hirohiko; Nakagawa, Hiroaki; and Isibasi, Masayasu, 4,283,567, Cl. 568-754.000.

Isomura, Yasuo: *See—*
Hirata, Yasufumi; Yanagisawa, Isao; Ishii, Yoshio; Tsukamoto, Shinichi; Ito, Noriki; Isomura, Yasuo; and Takeda, Masaaki, 4,283,408, Cl. 424-270.000.

Ito, Makoto: *See—*
Kitamura, Yoichi; Hotta, Hisashi; and Ito, Makoto, 4,282,981, Cl. 220-75.000.

Ito, Noriki: *See—*
Hirata, Yasufumi; Yanagisawa, Isao; Ishii, Yoshio; Tsukamoto, Shinichi; Ito, Noriki; Isomura, Yasuo; and Takeda, Masaaki, 4,283,408, Cl. 424-270.000.

Ito, Sumio: *See—*
Nohira, Hidetaka; Ito, Sumio; and Oki, Hisashi, 4,282,845, Cl. 123-568.000.

Ito, Susmu; and Nagao, Morimasa, to Nippon Electric Co., Ltd. Rotational detection device for a motor or the like. 4,283,679, Cl. 324-165.000.

Itoh, Tsutomu, to Onoda Cement Co., Ltd. Method of making and seam sealing a paper container. 4,283,189, Cl. 493-109.000.

Itoh, Yutaka: *See—*
Takahashi, Akio; Itoh, Yutaka; Wajima, Motoyo; Morishita, Hirosada; and Tsukanishi, Kenji, 4,283,522, Cl. 528-170.000.

ITT Industries, Inc.: *See—*
Schadow, Rudolf, 4,283,609, Cl. 200-67.00D.

Ivanchev, Sergei S.; Syrov, Anatoly A.; Pavljuchenko, Valery N.; Lesnikova, Ninel N.; and Rozhkova, Diana A. Hydroperoxide derivatives of hydroxyethylated compounds and method of producing same. 4,283,553, Cl. 560-176.000.

Iwanaga, Kazuyoshi; Sugano, Kazuhiko; and Ohtsuka, Kunio, to Nissan Motor Company, Limited. Transmission throttle valve of automatic power transmission. 4,282,781, Cl. 74-869.000.

Iwasaki, Shinjiro: *See—*
Kokusho, Yoshitaka; Machida, Haruo; and Iwasaki, Shinjiro, 4,283,494, Cl. 435-198.000.

Iwase, Takayuki: *See—*
Hanazono, Masami; Watanabe, Tomoyoshi; Nakai, Toshio; Kuzuya, Susumu; Asai, Akira; Iwase, Takayuki; Nakamura, Kazuo; and Onoda, Hiroshi, 4,283,150, Cl. 400-666.000.

Iwashita, Toru; Nagano, Mineo; and Tanaka, Koji, to Toyo Soda Manufacturing Co., Ltd. Process for manufacturing a petroleum resin. 4,283,518, Cl. 526-237.000.

Iwerks, Donald W.: *See—*
Snyder, R. David; Iwerks, Donald W.; Otto, Robert R.; Richardson, Lee R.; and Inglish, David S., 4,283,766, Cl. 364-525.000.

Izumita, Morishi; Umemoto, Masuo; Sato, Kazuhiro; Akiyama, Toshiyuki; Takahashi, Kenji; and Nagahara, Shusaku, to Hitachi, Ltd. Solid-state imaging apparatus with fixed pattern noise reduction. 4,283,742, Cl. 358-213.000.

J. I. Case Company: *See—*
Hirsch, Arthur E., 4,282,797, Cl. 91-1.000.

J. M. Voith GmbH: *See—*
Schiel, Christian, 4,282,656, Cl. 34-110.000.

J. P. Stevens & Co., Inc.: *See—*
Black, Thomas C., 4,282,906, Cl. 139-422.000.

J.S. Lock Company: *See—*
Genest, Leonard J.; and Madenlian, Vache B., 4,283,710, Cl. 340-149.00R.

Jackson, Robert. Boat hull anti-fouling shroud. 4,282,822, Cl. 114-222.000.

Jacmir Nominees Pty. Ltd.: *See—*
Teleskivi, Peter F., 4,282,687, Cl. 49-503.000.

Jacoby, Hans-Dieter, to Ernst Leitz Wetzlar GmbH. Process and apparatus for the automatic measuring of a workpiece. 4,283,669, Cl. 318-578.000.

Jacquemart, Patrick, to Les Cables de Lyon. Method of reconstituting the external conductor of a coaxial cable and cable thus reconstituted. 4,283,238, Cl. 156-49.000.

Jacquet, Bernard; Mondet, Jean; and Papantoniou, Christos, to L'Oreal. Cosmetic compositions containing polymers produced in the presence of cerium ions. 4,283,384, Cl. 424-47.000.

Jaeger: *See—*
Choisnet, Joel, 4,283,715, Cl. 340-378.100.

Jaffe, Wolfgang: *See—*
Herr, John A.; and Jaffe, Wolfgang, 4,283,647, Cl. 310-154.000.

Jagenberg-Werke AG: *See—*
Wohlfeil, Gerhard, 4,282,826, Cl. 118-118.000.

Jagger, David. Method and apparatus for selectively deleting during video tape recording. 4,283,735, Cl. 358-4.000.

Jakob, Franz, to Holger Reeh. Welding apparatus with stepping circuit current control. 4,283,618, Cl. 219-130.500.

James Howden and Company Australia Pty. Limited: *See*—
Holland, Kenneth B. D., 4,282,926, Cl. 165-1.000.

James, Kenneth; and Smith, Frederick J., to Talres Development (N.A.) N.V. P.V.C. Compositions for extrusion moulding. 4,283,310, Cl. 260-23.0XA.

James, Kenneth; and Smith, Frederick J., to Talres Development (N.A.) N.V. Gramophone record composition. 4,283,315, Cl. 260-23.0XA.

James, Robert; and Lovelace, Alan M. System for providing an integrated display of instantaneous information relative to aircraft attitude, heading, altitude, and horizontal situation. 4,283,705, Cl. 340-27.0NA.

Janke, Heinrich: *See*—
Wieber, Karl; Janke, Heinrich; Kraft, Winfried; and Lisfeld, Robert, 4,283,111, Cl. 350-39.000.

Janocha, Siegfried: *See*—
Siefried, Walter; Janocha, Siegfried; and Crass, Gunther, 4,283,453, Cl. 428-212.000.

Janome Sewing Machine Co., Ltd.: *See*—
Watanabe, Kazuo; Makabe, Hachiro; Kume, Toshiaki; Kakinuma, Toshihide; and Takenoya, Hideaki, 4,282,821, Cl. 112-158.00E.

Janzen, Wolfgang; and Frenker-Hackfort, Ludger, to Amsted-Siemag Kette GmbH. Chain wheel system. 4,283,183, Cl. 474-162.000.

Japan Atomic Energy Research Institute: *See*—
Machi, Sueo; Ishigaki, Isao; Sugo, Takanobu; Murata, Kazuo; Tanso, Shiro; and Senoo, Keizi, 4,283,442, Cl. 427-171.000.

Japan Exlan Company Ltd.: *See*—
Tsutsui, Nobuhiro; Takao, Seiji; and Murase, Ichiki, 4,283,359, Cl. 264-22.000.

Japan Synthetic Rubber Co., Ltd.: *See*—
Yoshida, Yoshinori; and Oka, Hiroshi, 4,283,579, Cl. 568-857.000.

Jautelat, Manfred; and Arlt, Dieter, to Bayer Aktiengesellschaft. Preparation of 2-(2,2-dimethyl-3-buten-1-yl)-2-oxazolines. 4,283,544, Cl. 548-216.000.

Jequier, William; Ghenassia, Elie; Fine, Francois; and Krempf, Gerard, to Produits Chimiques Ugine Kuhlmann. Method for making ethylene chlorohydrin. 4,283,577, Cl. 568-841.000.

Jerome, George A. Motor vehicle propulsion system. 4,282,948, Cl. 180-165.000.

Jersey Nuclear-Avco Isotopes, Inc.: *See*—
Weis, John A., 4,283,116, Cl. 350-174.000.

Jet-Ceramic Dental GmbH & Co. KG: *See*—
Browne, Laurence S.; Braun, Frank D.; and Witt, Walter, 4,283,173, Cl. 433-34.000.

Jim Walter Doors North American, Div. of The Celotex Corp.: *See*—
Kremm, Paul E., 4,282,920, Cl. 160-133.000.

Joachim Kreyenborg & Co.: *See*—
Schmitt, Bernhard, 4,282,989, Cl. 222-316.000.

Johann, Walter: *See*—
Feller, Otto; Oepen, Heinz; Kuhl, Manfred; Skrobek, Alois; Bornefeld, Horst; Seiler, Hans G.; and Johann, Walter, 4,282,784, Cl. 82-19.000.

Johnson, Albert O.; and Personette, David. Protective shroud for offshore oil wells. 4,283,159, Cl. 405-60.000.

Johnson, Anderson F., Jr.: *See*—
Bankes, Kristen E.; Johnson, Anderson F., Jr.; Large, Donald M.; and Reinhard, Fred J., 4,282,908, Cl. 140-147.000.

Johnson Controls, Inc.: *See*—
Bramow, Scott B.; Laakaniemi, Richard N.; and Wichman, Paul E., 4,283,007, Cl. 236-44.00C.

Johnson, Gordon C.: *See*—
Pines, Arthur N.; Johnson, Gordon C.; and Campbell, Fannie L., 4,283,519, Cl. 528-26.000.

Johnson & Johnson Baby Products Company: *See*—
Grubb, Lawrence B.; Simpson, Danny E.; Hoffman, Louis S.; and Williams, David M., 4,282,679, Cl. 46-193.000.
Mesek, Frederick K., 4,282,874, Cl. 128-287.000.

Johnson, Keith A., to Tavolek, Inc. Shower vaccination apparatus. 4,282,828, Cl. 119-3.000.

Johnson, Michael R.: *See*—
Althuis, Thomas H.; Harbert, Charles A.; Johnson, Michael R.; and Melvin, Lawrence S., Jr., 4,283,569, Cl. 568-764.000.

Johnson, Raymond L. Vehicle-attached article carrier. 4,283,083, Cl. 296-24.00R.

Johnston, Paul M., to Westinghouse Electric Corp. Programmable time registering AC electric energy meter having electronic accumulators and display. 4,283,772, Cl. 364-900.000.

Jolkovski, Robert M., to Product Planning & Development, Inc. Mounting system and method. 4,282,668, Cl. 40-155.000.

Jomon, Kazuyoshi: *See*—
Imanaka, Hiroshi; Hosoda, Junzi; Jomon, Kazuyoshi; Sakai, Heiichi; Ueda, Ikuo; and Morino, Daizou, 4,283,492, Cl. 435-47.000.

Jones, Richard E.: *See*—
Goldstein, David; Jones, Richard E.; and Sery, Robert S., 4,283,233, Cl. 148-11.50R.

Jones, Robert J., to TRW Inc. Curable aromatic epoxy-polyimide and cycloaliphatic epoxy-polyimide compositions. 4,283,521, Cl. 528-117.000.

Jones, Robert W.: *See*—
Herd, William H., Jr.; Curtis, Stanley F.; Mullican, Vernon T.; and Jones, Robert W., 4,283,355, Cl. 261-44.00F.

Jordan, Rolf W. Blow gun dart. 4,283,061, Cl. 273-423.000.

Joy Manufacturing Company: *See*—
Becker, Harry R., 4,282,971, Cl. 198-846.000.
Hibbard, George A., 4,282,937, Cl. 173-1.000.

Joyce, Patrick H.: *See*—
White, William L., 4,283,000, Cl. 229-17.00B.

JSJ Corporation: *See*—
Osborn, Charles, 4,282,768, Cl. 74-473.00R.

Judson, Beth R.: *See*—
Doster, Robert C.; Judson, Beth R.; and Soo Hoo, Kathleen G., 4,283,430, Cl. 426-284.000.

Junck, John A.: *See*—
Harmon, James L.; and Junck, John A., 4,282,898, Cl. 137-596.130.

Jung, Nicholas R.: *See*—
Fairhead, Michael J. B.; and Jung, Nicholas R., 4,283,484, Cl. 430-306.000.

Jungesjo, Harald N., to Anderson-Cook, Inc. Method of making rotary die racks. 4,282,782, Cl. 76-107.00R.

Junker, Ralph D., to Junker Systems, Incorporated. Consumable caseless ammunition and firearm for utilizing same. 4,282,670, Cl. 42-16.000.

Junker Systems, Incorporated: *See*—
Junker, Ralph D., 4,282,670, Cl. 42-16.000.

Kabushiki Kaisha Kawai Gakki Seisakusho: *See*—
Obayashi, Nobuharu; Hashizume, Hikaru; Kameyama, Seiji; Ezawa, Sadaaki; Kondo, Tatsunori; Takauji, Kiyomi; and Aoyama, Tohru, 4,282,785, Cl. 84-1.010.

Kabushiki Kaisha Kito: *See*—
Kito, Miyoshi; and Igarashi, Kazuo, 4,283,722, Cl. 340-685.000.

Kabushiki Kaisha Komatsu Seisakusho: *See*—
Suganami, Takashi; Takeda, Tashiro; Nakayama, Tetsuya; Shimizu, Koh; and Manseki, Teruo, 4,282,933, Cl. 172-4.500.

Kabushiki Kaisha Tokai Rika Denki Seisakusho: *See*—
Matsunami, Muneharu; Saito, Toshio; Yoshida, Akio; and Inokuchi, Nobuyuki, 4,283,076, Cl. 280-806.000.

Kabutz, Hans Rudolf: *See*—
Du Toit, Rudolph M., 4,282,867, Cl. 128-66.000.

Kadowaki, Kunio: *See*—
Arai, Hisaharu; and Kadowaki, Kunio, 4,283,356, Cl. 261-72.00R.

Kafura, Frederick G.; and Medland, Thomas M., to Hammermill Paper Company. Barrier guard. 4,282,963, Cl. 192-133.000.

Kagaku Kenkyujo Kabushiki Kaisha Hayashibara Seibutsu: *See*—
Hirao, Mamoru, 4,283,065, Cl. 277-135.000.

Kagohara, Hiromi: *See*—
Fukui, Yutaka; and Kagohara, Hiromi, 4,283,234, Cl. 148-32.500.

Kahmann, Albrecht: *See*—
Heinbockel, Wolfgang; Siewert, Wolfgang; Kahmann, Albrecht; and Lambrecht, Gerhard, 4,283,275, Cl. 209-3.000.

Kai, Toshio: *See*—
Tanaka, Junzo; Kai, Toshio; and Kurita, Hitoshi, 4,283,614, Cl. 219-10.55R.

Kaiser, Hermann: *See*—
Brown, James M.; Kaiser, Hermann; and Olson, Jerry A., 4,282,751, Cl. 73-202.000.

Kaiser, Theodore, to Motorola, Inc. Yoke mounting assembly for a video camera. 4,283,743, Cl. 358-248.000.

Kaji, Hisatsugu; Kameyama, Iwawo; Hamaguti, Takashi; and Miyamori, Tamotsu, to Kureha Kagaku Kogyo Kabushiki Kaisha. Apparatus for making pitch fiber infusible. 4,283,369, Cl. 422-193.000.

Kakinuma, Toshihide: *See*—
Watanabe, Kazuo; Makabe, Hachiro; Kume, Toshiaki; Kakinuma, Toshihide; and Takenoya, Hideaki, 4,282,821, Cl. 112-158.00E.

Kakugo, Masahiro: *See*—
Shiga, Akinobu; Matsuyama, Kiyoshi; Kakugo, Masahiro; Naito, Yukio; and Ima, Seiichiro, 4,283,463, Cl. 428-512.000.

Kakuhashi, Takeshi; and Fukunaga, Kazuo, to Nitto Electric Industrial Co., Ltd. Etching solution for tin-nickel alloy and process for etching the same. 4,283,248, Cl. 156-637.000.

Kalaus, Gyorgy: *See*—
Szantay, Csaba; Szabo, Lajos; Kalaus, Gyorgy; Dancsi, Lajos; Keve, Tibor; Karpati, Egon; and Szporny, Laszlo, 4,283,401, Cl. 424-256.000.

Kalian, Alan. Cutting torch attachment. 4,283,043, Cl. 266-66.000.

Kalotay, Paul Z.; and Ghahramani, Iraj, to International Telephone and Telegraph Corporation. Densitometer. 4,282,742, Cl. 73-32.00A.

Kalsec, Inc.: *See*—
Todd, Paul H., Jr.; and Haley, Howard E., 4,283,429, Cl. 426-250.000.

Kambara, Masahiro: *See*—
Morio, Minoru; Nakamura, Tadahiko; Kambara, Masahiro; and Kubota, Yukio, 4,283,736, Cl. 358-4.000.

Kameyama, Iwawo: *See*—
Kaji, Hisatsugu; Kameyama, Iwawo; Hamaguti, Takashi; and Miyamori, Tamotsu, 4,283,369, Cl. 422-193.000.

Kameyama, Seiji: *See*—
Obayashi, Nobuharu; Hashizume, Hikaru; Kameyama, Seiji; Ezawa, Sadaaki; Kondo, Tatsunori; Takauji, Kiyomi; and Aoyama, Tohru, 4,282,785, Cl. 84-1.010.

Kamiya, Tadashi: *See*—
Kimura, Shigeo; Kamiya, Tadashi; and Hayashi, Kiyotaka, 4,283,706, Cl. 340-58.000.

Kane, Bernard J.; and Traynor, Sean G., to SCM Corporation. Paramenth-1-ene-7-sulfonic acid and salts thereof. 4,283,347, Cl. 260-429.900.

Kane, Robert J. Cleaning device for swimming pools. 4,282,893, Cl. 134-167.00R.

Kaneko, Tadashi; Shimura, Takeo; Matsumoto, Masanori; Moriguchi, Hiroyuki; and Nomori, Hiroyuki, to Konishiroku Photo Industry Co., Ltd. Oleophilic resin encapsulates photoconductive zinc oxide parti-

cles dispersed in vinyl chloride and vinyl acetate resin binder for electrophotosensitive recording layer. 4,283,474, Cl. 430-69.000.

Kanno, Fumio: *See—*
Nakajima, Fumio; Machida, Takayasu; Yamada, Kenji; and Kanno, Fumio, 4,283,783, Cl. 368-76.000.

Kantrowitz, Arthur R.: *See—*
Daugherty, Jack D.; Kantrowitz, Arthur R.; Sutton, George W.; and Zappa, Oswald L., 4,283,686, Cl. 331-94.50G.

Kao Soap Company, Limited: *See—*
Atsumi, Toshio; Takebayashi, Yoshiaki; and Okajima, Hideki, 4,283,422, Cl. 424-325.000.

Kap & Kor, Inc.: *See—*
Randall, James E., 4,282,607, Cl. 2-197.000.

Kaplan, Leonard, to Union Carbide Corporation. Process for making glycol. 4,283,578, Cl. 568-852.000.

Kaplow, Roy; and Frank, Robert I., to Massachusetts Institute of Technology. High-intensity, solid-state solar cell. 4,283,589, Cl. 136-249.000.

Kappus, Wolfgang: *See—*
Gutlich, Karl-Friedrich; Kappus, Wolfgang; Zweigardt, Herbert; and Eckardt, Rudolf, 4,283,467, Cl. 429-51.000.

Karlin, Richard A.; Barlow, Gordon A.; and Krutsch, John R., to Gordon Barlow Design. Bowling ball game. 4,283,049, Cl. 273-38.000.

Karpati, Egon: *See—*
Szantay, Csaba; Szabo, Lajos; Kalaus, Gyorgy; Dancsi, Lajos; Keve, Tibor; Karpati, Egon; and Szporny, Laszlo, 4,283,401, Cl. 424-256.000.

Kasama, Yasuo: *See—*
Hamaoka, Tsutomu; and Kasama, Yasuo, 4,283,479, Cl. 430-264.000.

Kaschavtsev, Vladilen E.: *See—*
Tabakov, Vladimir P.; Kornev, Boris P.; Buchenkov, Leonid N.; Gorbunov, Andrei T.; Kaschavtsev, Vladilen E.; Pilatovsky, Viktor P.; Gurov, Evgeny I.; Obrezkov, Alexandr I.; Vakhitov, Gadel G.; Bulgakov, Rishad T.; Maximov, Vladimir P.; Maxutov, Rafkhat A.; Shnirelman, Alexandr I.; Dobroskok, Boris E.; Asfandiyarov, Khalim A.; and Fatkullin, Airat K., deceased, 4,283,088, Cl. 299-2.000.

Kashiwabara, Akira: *See—*
Kubotera, Kikuo; and Kashiwabara, Akira, 4,283,478, Cl. 430-156.000.

Kashiwagi, Shigeru: *See—*
Miyoshi, Tadayoshi; and Kashiwagi, Shigeru, 4,283,663, Cl. 315-400.000.

Kastner, Ralph E.: *See—*
Koch, Kay F.; and Kastner, Ralph E., 4,283,390, Cl. 424-122.000.

Kato, Heizaburo, to Sankyo Manufacturing Company, Ltd. Indexing drive apparatus. 4,282,779, Cl. 74-822.000.

Kato, Takaaki: *See—*
Totani, Shinzo; and Kato, Takaaki, 4,282,780, Cl. 74-866.000.

Katsumata, Masaaki: *See—*
Takagi, Yasuo; Onoda, Michio; Katsumata, Masaaki; and Yoneda, Kenji, 4,282,841, Cl. 123-425.000.

Katsuyama, Harumi: *See—*
Kawamura, Koichi; Katsuyama, Harumi; and Sato, Hideo, 4,283,475, Cl. 430-70.000.

Kauss, Wolfgang; and Muncke, Ludwig, to Fritzmeier AG. Support unit for a driver's cab in a utility vehicle. 4,283,087, Cl. 296-190.000.

Kawabata, Yasujiro; and Ogata, Ikuei, to Agency of Industrial Science & Technology. Process for preparation of aldehydes. 4,283,563, Cl. 568-454.000.

Kawada, Yoshinosuke: *See—*
Koizumi, Hisao; Kawada, Yoshinosuke; and Matsui, Koichi, 4,282,860, Cl. 126-429.000.

Kawai Musical Instruments Mfg. Co., Ltd.: *See—*
Deutsch, Ralph; and Deutsch, Leslie J., 4,282,786, Cl. 84-1.010.

Kawamura, Koichi; Katsuyama, Harumi; and Sato, Hideo, to Fuji Photo Film Co., Ltd. Pentamethine thiopyrylium salts, process for production thereof, and photoconductive compositions containing said salts. 4,283,475, Cl. 430-70.000.

Kawamura, Osamu. Method of forming a shaped fluorescent light bulb envelope. 4,283,217, Cl. 65-108.000.

Kayama, Naohiro: *See—*
Fujii, Setsuro; Watanabe, Tsuyoshi; Shiota, Masashi; Okumoto, Itsuo; and Kayama, Naohiro, 4,283,418, Cl. 424-310.000.

Kayser-Roth Hosiery, Inc.: *See—*
Shields, Harper; and Farrell, Roscoe M., 4,282,725, Cl. 66-157.000.

Kazuomi, Yamamura; Takasuke, Fukui; Yoshinao, Iwamoto; Yuichi, Shirasaki; Masayuki, Fujise; Hikoaki, Sugimoto; Kikuo, Shirai; and Minoru, Yoshida, to Kokusai Denshin Denwa Co., Ltd. System for detecting an underwater buried cable. 4,283,681, Cl. 324-326.000.

Keem, David L.: *See—*
Barlow, Roland J.; and Keem, David L., 4,282,798, Cl. 91-358.00R.

Keim, Karl-Heinz; Kiauk, Reinhard; and Meisenburg, Ewald, to Union Rheinische Braunkohlen Kraftstoff Aktiengesellschaft. Process for the catalytic isomerization of o-cresol. 4,283,571, Cl. 568-783.000.

Keith, Charles H.; and Tucker, Richard O., to Celanese Corporation. Method of forming cigarette filter material. 4,283,186, Cl. 493-42.000.

Kelsey-Hayes Company: *See—*
Zenker, Richard L., 4,282,762, Cl. 73-862.520.

Kemmel, Patrice J., to Pfaff Haushaltmaschinen GmbH. Speed control device for a home sewing machine. 4,283,666, Cl. 318-349.000.

Kemper, Yves J., to Vadetec Corporation. Hybrid vehicular power system and method. 4,282,947, Cl. 180-165.000.

Kendall Company, The: *See—*
Steigerwald, Carl J.; and Villari, Frank K., 4,282,610, Cl. 2-414.000.

Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung: *See—*
Koeppe, Werner; Bohnenstingl, Josef; and Mastera, Stanislaus G. J., 4,283,367, Cl. 422-159.000.

Kernforschungsanlage Julich, Gesellschaft mit beschrankter Haftung: *See—*
Putral, Alexander; and Schwochau, Klaus, 4,283,370, Cl. 423-6.000.

Kerr, Bruce G., to Goring Kerr Limited. Electrical bridge balancing circuit. 4,283,680, Cl. 324-234.000.

Kerr-McGee Corporation: *See—*
Rado, Theodore A., 4,283,371, Cl. 423-126.000.

Keve, Tibor: *See—*
Szantay, Csaba; Szabo, Lajos; Kalaus, Gyorgy; Dancsi, Lajos; Keve, Tibor; Karpati, Egon; and Szporny, Laszlo, 4,283,401, Cl. 424-256.000.

Keyser, Shirley A. Sled structure. 4,283,068, Cl. 280-19.000.

Khoury, Amin J.: *See—*
Beigler, Myron A.; and Khoury, Amin J., 4,282,863, Cl. 128-1.00R.

Kiauk, Reinhard: *See—*
Keim, Karl-Heinz; Kiauk, Reinhard; and Meisenburg, Ewald, 4,283,571, Cl. 568-783.000.

Kiesel, Karl: *See—*
Braun, Heinz; Kiesel, Karl; and Stotz, Wolf-Gunter, 4,283,023, Cl. 242-67.10R.

Kikuo, Shirai: *See—*
Kazuomi, Yamamura; Takasuke, Fukui; Yoshinao, Iwamoto; Yuichi, Shirasaki; Masayuki, Fujise; Hikoaki, Sugimoto; Kikuo, Shirai; and Minoru, Yoshida, 4,283,681, Cl. 324-326.000.

Kilpela, Tauno B.; and Haataja, Bruce A., to Michigan Technological University. Fingerling shear. 4,282,910, Cl. 144-3.00K.

Kimoto, Koichi: *See—*
Okai, Sakuo; and Kimoto, Koichi, 4,283,481, Cl. 430-271.000.

Kimura, Shigeo; Kamiya, Tadashi; and Hayashi, Kiyotaka, to Honda Giken Kogyo Kabushiki Kaisha. Puncture detecting device. 4,283,706, Cl. 340-58.000.

Kimura, Shigeru: *See—*
Yamazaki, Haruo; Matsumoto, Masaharu; and Kimura, Shigeru, 4,283,155, Cl. 403-163.000.

King, John M.: *See—*
deVries, Louis; and King, John M., 4,283,295, Cl. 252-46.400.

King, Joseph L. Adjustable shower and massage apparatus. 4,282,612, Cl. 4-601.000.

King, Thomas C., to Associated Metals & Minerals Corporation. X-Ray fluorescence analysis. 4,283,625, Cl. 250-272.000.

King, Wendell L., to Medtronic, Inc. Adhesive bonded positive fixation epicardial lead. 4,282,886, Cl. 128-785.000.

Kirchner, Darrell G.: *See—*
Chakrabarti, Paritosh M.; and Kirchner, Darrell G., 4,283,321, Cl. 260-29.6MQ.

Kirin Beer Kabushiki Kaisha: *See—*
Miyazawa, Takashi, 4,283,145, Cl. 356-364.000.

Kishi, Yoshio: *See—*
Kondo, Masayuki; and Kishi, Yoshio, 4,283,644, Cl. 310-68.00R.

Kisteleki, Gusztav: *See—*
Fridrich, Janos; Hetesi, Zoltan; Kisteleki, Gusztav; Misangyi, Laszlo; Szegletes, Emil; and Szabo, Jozsef, 4,283,598, Cl. 174-169.000.

Kita, Yuzo; Yamaguchi, Noboru; Shibukawa, Masaru; and Minorikawa, Kazuo, to Hitachi, Ltd. Method and apparatus for controlling data transfer direction on a data bus. 4,283,760, Cl. 364-200.000.

Kitamura, Yoichi; Hotta, Hisashi; and Ito, Makoto, to Toyo Seikan Kaisha, Ltd. Bright welded seam can of tinplate. 4,282,981, Cl. 220-75.000.

Kito, Miyoshi; and Igarashi, Kazuo, to Kabushiki Kaisha Kito. Overload indication device for a lever hoist. 4,283,722, Cl. 340-685.000.

Kiwala, Jacob: *See—*
Sprecker, Mark A.; Schmitt, Frederick L.; Vock, Manfred H.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,283,576, Cl. 568-826.000.

Kleeberg, Wolfgang; Rogler, Wolfgang; Gentzkow, Wolfgang V.; and Rubner, Roland, to Siemens Aktiengesellschaft. Method for cross-linking and stabilizing polymers which can be cross-linked radically. 4,283,505, Cl. 525-281.000.

Kleemann, Axel: *See—*
Engel, Jurgen; Kleemann, Axel; Stroman, Fritz; and Thiemer, Klaus, 4,283,405, Cl. 424-267.000.

Kleen-Rite, Inc.: *See—*
Smith, Robert G., 4,283,279, Cl. 210-123.000.

Klicker, James D., to Borg-Warner Corporation. Conversion of alkyl phenyl ether to alkylphenol. 4,283,572, Cl. 568-783.000.

Klieger, Erich: *See—*
Speck, Ulrich; Klieger, Erich; and Mutzel, Wolfgang, 4,283,381, Cl. 424-5.000.

Kljuchnikov, Sergei I.: *See—*
Serbinenko, Fedor A.; and Kljuchnikov, Sergei I., 4,282,875, Cl. 128-325.000.

Klockner-Humboldt-Deutz AG: *See—*
Melcher, Gerhard; and Weigel, Horst, 4,283,045, Cl. 266-162.000.
Paschen, Peter; Rao, Chatty; and Preuss, Helmut, 4,283,285, Cl. 210-326.000.

Knight, Gordon R.: *See—*
Curry, Donald J.; Knight, Gordon R.; and Kowalski, Daniel C., 4,283,777, Cl. 369-32.000.

Knittel, Volker: *See—*
Girg, Friedrich; and Knittel, Volker, 4,283,229, Cl. 106-171.000.
Knops, Hans-Joachim: *See—*
Kramer, Wolfgang; Knops, Hans-Joachim; Buchel, Karl H.; and Brandes, Wilhelm, 4,283,406, Cl. 424-269.000.
Knorr, Harald; Maier, Thomas; Mildenberger, Hilmar; and Korbanka, Helmut, to Hoechst Aktiengesellschaft. Process for the preparation of 1,2,4-triazole. 4,283,545, Cl. 548-262.000.
Kobayashi, Hiroshi: *See—*
Yoshimura, Masahito; Hoshiyama, Satoshi; Takamatsu, Hideki; Kobayashi, Hiroshi; and Takigawa, Shinichiro, 4,283,586, Cl. 585-512.000.
Kobayashi, Kengo: *See—*
Shimizu, Kanryo; and Kobayashi, Kengo, 4,282,955, Cl. 192-0.096.
Kobayashi, Yoshiro: *See—*
Kodaira, Tsumoru; Kobayashi, Yoshiro; and Kurono, Hitoshi, 4,283,344, Cl. 260-346.220.
Kobe, Inc.: *See—*
Erickson, John W., 4,283,005, Cl. 233-47.00A.
Koch, Kay F.; and Kastner, Ralph E., to Eli Lilly and Company. Antibiotics and process for production thereof. 4,283,390, Cl. 424-122.000.
Kochs Adler AG: *See—*
Sartor, Friedhelm, 4,282,819, Cl. 112-121.120.
Kodaira, Tsumoru; Kobayashi, Yoshiro; and Kurono, Hitoshi, to Nihon Nohyaku Co., Ltd. Process for producing 1,1,3,3-tetrafluoro-1,3-dihydro-isobenzofuran. 4,283,344, Cl. 260-346.220.
Koeppe, Werner; Bohnenstingl, Josef; and Mastera, Stanislaus G. J., to Kernforschungsanlage Julich Gessellschaft mit beschrankter Haftung. Plant for separating krypton and xenon from radioactive waste gases. 4,283,367, Cl. 422-159.000.
Koerner, Gotz; Nickel, Friedhelm; and Schmidt, Gunter, to Th. Goldschmidt AG. Preparation for shrinkproofing wool. 4,283,191, Cl. 8-128.00A.
Koiki, Tsutomu, to Toko, Inc. Switching regulator. 4,283,759, Cl. 363-19.000.
Koizumi, Hisao; Kawada, Yoshinosuke; and Matsui, Koichi, to Tokyo Shibaura Electric Co., Ltd. Hot air type solar heat-collecting apparatus. 4,282,860, Cl. 126-429.000.
Kojima, Shigenori; and Koyama, Katsumi, to Amada Company, Limited. Method and apparatus for adjusting stroke length of a ram for presses. 4,282,738, Cl. 72-389.000.
Kokusai Denshin Denwa Co., Ltd.: *See—*
Kazuomi, Yamamura; Takasuke, Fukui; Yoshinao, Iwamoto; Yuichi, Shirasaki; Masayuki, Fujise; Hikoaki, Sugimoto; Kikuo, Shirai; and Minoru, Yoshida, 4,283,681, Cl. 324-326.000.
Satoh, Gunkichi, 4,283,684, Cl. 330-277.000.
Kokusho, Yoshitaka; Machida, Haruo; and Iwasaki, Shinjiro, to Meito Sangyo Kabushiki Kaisha. Microbial lipase, process for its preparation and microbiologically pure culture therefor. 4,283,494, Cl. 435-198.000.
Kollmar, Friedrich: *See—*
Handte, Herbert; and Kollmar, Friedrich, 4,283,637, Cl. 307-228.000.
Kolsky, Rodger E.; and Naar, Raymond Z., to Huyck Corporation. Laminate structures for acoustical applications and method of making them. 4,283,457, Cl. 428-285.000.
Kolze, Lawrence A., to Eaton Corporation. Pressure operated pilot control shut-off valve. 4,283,040, Cl. 251-30.000.
Komai, Takeshi: *See—*
Matsushima, Masaru; Komai, Takeshi; and Nakayama, Masaharu, 4,283,512, Cl. 525-438.000.
Kominami, Yasuo; Yamamura, Masahiro; Mizumoto, Katsuji; and Hanada, Toshihide, to Hitachi, Ltd.; and Pioneer Electronic Corp. Constant voltage output circuit. 4,283,674, Cl. 323-313.000.
Kompelien, Arlon D., to Honeywell Inc. Field effect transistor switched temperature control circuit. 4,283,638, Cl. 307-580.000.
Kondo, Kiyoshi; Takashima, Toshiyuki; and Tunemoto, Daici, to FMC Corporation. Process to bicyclic lactones. 4,283,341, Cl. 260-343.30R.
Kondo, Masayuki; and Kishi, Yoshio, to Sony Corporation. DC Motor. 4,283,644, Cl. 310-68.00R.
Kondo, Shiro; and Oyama, Minoru, to Alps Electric Co., Ltd. Construction for attaching knob to manipulation rod of push-button type mechanism. 4,283,613, Cl. 200-340.000.
Kondo, Tatsunori: *See—*
Obayashi, Nobuharu; Hashizume, Hikaru; Kameyama, Seiji; Ezawa, Sadaaki; Kondo, Tatsunori; Takauji, Kiyomi; and Aoyama, Tohru, 4,282,785, Cl. 84-1.010.
Konian, Richard R.; and Walsh, James L., to International Business Machines Corp. All-NPN transistor driver and logic circuit. 4,283,640, Cl. 307-270.000.
Konii, Susumu; Sase, Shigeo; Yoshida, Masatoshi; Kuroda, Shoei; and Sumi, Takeshi, to Hitachi Chemical Company, Ltd. Process for preparing foundry cores or molds and binder materials used therefor. 4,283,319, Cl. 260-29.300.
Konishiroku Photo Industry Co., Ltd.: *See—*
Kaneko, Tadashi; Shimura, Takeo; Matsumoto, Masanori; Moriguchi, Hiroyuki; and Nomori, Hiroyuki, 4,283,474, Cl. 430-69.000.
Ohnuki, Mitsuo; and Yamada, Masashi, 4,283,131, Cl. 354-195.000.
Kopich, Leonard F.; and Steele, James A., to General Motors Corporation. Hub locks for independently suspended wheels. 4,282,949, Cl. 180-252.000.
Korbanka, Helmut: *See—*
Knorr, Harald; Maier, Thomas; Mildenberger, Hilmar; and Korbanka, Helmut, 4,283,545, Cl. 548-262.000.
Kornev, Boris P.: *See—*
Tabakov, Vladimir P.; Kornev, Boris P.; Buchenkov, Leonid N.; Gorbunov, Andrei T.; Kaschavtsev, Vladilen E.; Pilatovsky, Viktor P.; Gurov, Evgeny I.; Obrezkov, Alexandr I.; Vakhitov, Gadel G.; Bulgakov, Rishad T.; Maximov, Vladimir P.; Maxutov, Rafkhat A.; Shnirelman, Alexandr I.; Dobroskok, Boris E.; Asfandiyarov, Khalim A.; and Fatkullin, Airat K., deceased, 4,283,088, Cl. 299-2.000.
Kostan, Charles C.: *See—*
Fox, David H.; and Kostan, Charles C., 4,282,836, Cl. 123-146.50A.
Koszegi, Bela: *See—*
Szabo, Tibor; Institoris, Laszlo; Kovacs, Gabor; Stadler, Istvan; and Koszegi, Bela, 4,283,413, Cl. 424-285.000.
Kountz, Kenneth J.; Erth, Richard A.; and Norbeck, Dean K., to Borg-Warner Corporation. Evaporator inlet water temperature control system. 4,282,718, Cl. 62-115.000.
Kountz, Kenneth J.; Erth, Richard A.; and Norbeck, Dean K., to Borg-Warner Corporation. Control system for regulating large capacity rotating machinery. 4,282,719, Cl. 62-115.000.
Kovacs, Gabor: *See—*
Szabo, Tibor; Institoris, Laszlo; Kovacs, Gabor; Stadler, Istvan; and Koszegi, Bela, 4,283,413, Cl. 424-285.000.
Kowalski, Daniel C.: *See—*
Curry, Donald J.; Knight, Gordon R.; and Kowalski, Daniel C., 4,283,777, Cl. 369-32.000.
Kowalski, Joseph W., to B-Line Systems, Inc. Connector. 4,283,157, Cl. 403-297.000.
Koyama, Katsumi: *See—*
Kojima, Shigenori; and Koyama, Katsumi, 4,282,738, Cl. 72-389.000.
Koyama, Tamotsu; and Kuroda, Yoshiharu, to Sharp Kabushiki Kaisha. Piezo-vibrator unit ceramic package with integral capacitor. 4,283,650, Cl. 310-344.000.
Kraft, Derald H., to Dyneer Corporation. Hydraulic belt tensioner construction. 4,283,182, Cl. 474-110.000.
Kraft, Winfried: *See—*
Wieber, Karl; Janke, Heinrich; Kraft, Winfried; and Lisfeld, Robert, 4,283,111, Cl. 350-39.000.
Krajicek, Richard W., to Carmel Energy, Inc. Method of controlling scale in oil recovery operations. 4,282,929, Cl. 166-303.000.
Kramer, Wolfgang; Knops, Hans-Joachim; Buchel, Karl H.; and Brandes, Wilhelm, to Bayer Aktiengesellschaft. Combating Botrytis fungi with 1-(2,4-dichlorophenyl)-1-(2,6-dihalogenobenzyloximino)-2-(1,2,4-triazol-1-yl)-ethanes. 4,283,406, Cl. 424-269.000.
Kratsas, Richard: *See—*
Williams, Brian; and Kratsas, Richard, 4,282,685, Cl. 49-141.000.
Krauss, Jack. Buckle. 4,282,634, Cl. 24-230.00R.
Krauss-Maffei Aktiengesellschaft: *See—*
Wilkesmann, Helmut, 4,283,286, Cl. 210-365.000.
Kremm, Paul E., to Jim Walter Doors North American, Div. of The Celotex Corp. Grille. 4,282,920, Cl. 160-133.000.
Krempf, Gerard: *See—*
Jequier, William; Ghenassia, Elie; Fine, Francois; and Krempf, Gerard, 4,283,577, Cl. 568-841.000.
Krim, Michael K., to Perkin-Elmer Corporation, The. Adjustable CTE graphite-epoxy bar. 4,282,688, Cl. 52-1.000.
Kron, Gerald J.; and Hale, Timothy E., to Singer Company, The. Vision loss simulator. 4,283,177, Cl. 434-59.000.
Krone GmbH: *See—*
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Kross, Inc.: *See—*
Smith, Kenneth R., 4,283,032, Cl. 248-97.000.
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Polenz, Joachim; and Wagner, Hans, 4,283,253, Cl. 201-30.000.
Krutsch, John R.: *See—*
Karlin, Richard A.; Barlow, Gordon A.; and Krutsch, John R., 4,283,049, Cl. 273-38.000.
Kubo, Sueki, to Kurosaki Refractories Co., Ltd. Method for repairing the tap hole of a converter. 4,283,042, Cl. 266-45.000.
Kubota, Yukio: *See—*
Morio, Minoru; Nakamura, Tadahiko; Kambara, Masahiro; and Kubota, Yukio, 4,283,736, Cl. 358-4.000.
Kubotera, Kikuo; and Kashiwabara, Akira, to Fuji Photo Film Co., Ltd. Light-sensitive material for preparing a lithographic printing plate and a process using the same. 4,283,478, Cl. 430-156.000.
Kuehler, Christopher W.: *See—*
Rosenthal, Joel W.; and Kuehler, Christopher W., 4,283,268, Cl. 208-8.0LE.
Kuehne, Martin E., to University of Vermont. Preparation of vincadifformine and related derivatives. 4,283,536, Cl. 546-51.000.
Kuhl, Manfred: *See—*
Feller, Otto; Oepen, Heinz; Kuhl, Manfred; Skrobek, Alois; Bornefeld, Horst; Seiler, Hans G.; and Johann, Walter, 4,282,784, Cl. 82-19.000.
Kujawski, Edmund. Metering valve. 4,283,041, Cl. 251-205.000.
Kulekov, Stefan I.; and Pavlov, Alexander S., to DSO "Montaji"—Kontrolno Zavarachno Upravlenie. Apparatus for the control of self-propelled gamma-flaw detector. 4,283,628, Cl. 250-358.00P.
Kulesza, Ralph J.; Meyer, Burton C.; and Nix, Donald F., to Marvin Glass & Associates. Batting practice apparatus. 4,282,848, Cl. 124-16.000.
Kullendorff, Anders: *See—*
Edwall, Bengt; and Kullendorff, Anders, 4,282,715, Cl. 60-646.000.

Kumazawa, Toshihiko: *See*—
Odanaka, Hiroshi; Saotome, Minoru; and Kumazawa, Toshihiko, 4,283,580, Cl. 568-858.000.
Kume, Toshiaki: *See*—
Watanabe, Kazuo; Makabe, Hachiro; Kume, Toshiaki; Kakinuma, Toshihide; and Takenoya, Hideaki, 4,282,821, Cl. 112-158.00E.
Kunii, Yutaka; Shimoji, Toshikuni; and Tsutsumi, Masaaki, to Tokyo Shibaura Denki Kabushiki Kaisha. Ultrasonic diagnosing apparatus. 4,282,879, Cl. 128-660.000.
Kuo, Ted L. C.: *See*—
Piasecki, Raymond F.; and Kuo, Ted L. C., 4,283,593, Cl. 174-36.000.
Kuper, Douglas D.; and Menezes, William A., to Sony Corporation. Editing apparatus. 4,283,745, Cl. 360-13.000.
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Kaji, Hisatsugu; Kameyama, Iwawo; Hamaguti, Takashi; and Miyamori, Tamotsu, 4,283,369, Cl. 422-193.000.
Yamauchi, Takashi; and Nanbu, Hirofumi, 4,283,352, Cl. 568-311.000.
Kuribayashi, Tetsuzo; and Hashimoto, Tsuguo, to Hitachi, Ltd. Method for the shutdown and restarting of combined power plant. 4,282,708, Cl. 60-39.020.
Kurita, Hitoshi: *See*—
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Kuroda, Yoshiharu: *See*—
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Kurosaki Refractories Co., Ltd.: *See*—
Kubo, Sueki, 4,283,042, Cl. 266-45.000.
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Kurtz, Thomas D. Mirror mounting device. 4,283,038, Cl. 248-478.000.
Kuzminskas, Vaidotas: *See*—
Szydlowski, Donald F.; Kuzminskas, Vaidotas; and Bittner, Joseph E., 4,282,832, Cl. 122-28.000.
Kuznetsov, Igor G.: *See*—
Voronkov, Mikhail G.; Platonova, Ada T.; Simbirtsev, Nikolai L.; Dyakov, Valery M.; Dyban, Andrei P.; and Kuznetsov, Igor G., 4,283,419, Cl. 424-316.000.
Kuzuwata, Masayuki; Machida, Hazime; Tamura, Hiroshi; and Saito, Tadashi, to Ricoh Co., Ltd. Method for desensitizing offset printing plates. 4,282,811, Cl. 101-451.000.
Kuzuya, Susumu: *See*—
Hanazono, Masami; Watanabe, Tomoyoshi; Nakai, Toshio; Kuzuya, Susumu; Asai, Akira; Iwase, Takayuki; Nakamura, Kazuo; and Onoda, Hiroshi, 4,283,150, Cl. 400-666.000.
Laakaniemi, Richard N.: *See*—
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Labaz: *See*—
Pigerol, Charles; Vernieres, Jean-Claude; Eymard, Pierre; Simiand, Jacques; Broll, Madeleine; and Lacolle, Jean-Yves, 4,283,420, Cl. 424-317.000.
Labofina, S.A.: *See*—
Bracke, William J. I.; and Lanza, Emmanuel, 4,283,506, Cl. 525-309.000.
Lackenbach, Lilling & Siegel: *See*—
Anosov, Oleg V.; Mirzoev, Alexandr G.; and Obraztsov, Jury V., 4,283,595, Cl. 174-73.00R.
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Lafferty, Lyndon E. Memory aiding device. 4,282,824, Cl. 116-308.000.
Lai, So S. Low-flying object velocity-position tracing system. 4,283,138, Cl. 356-28.000.
Laimins, Eric: *See*—
Lockery, Harry E.; and Laimins, Eric, 4,282,748, Cl. 73-862.660.
Lala, Louis A., to American Screen Printing Equipment Company. Drive for printing elongated articles. 4,282,805, Cl. 101-38.00R.
Lala, Louis A., to American Screen Printing Equipment Company. Silk screen printing machine. 4,282,806, Cl. 101-38.00R.
Lamadrid, Rene G., to Baxter Travenol Laboratories, Inc. Vibration attenuation support assembly for a centrifugal liquid processing apparatus. 4,283,004, Cl. 233-1.00C.
Lamborn, Steven H. Finger mountable electric guitar pick-up. 4,282,789, Cl. 84-1.150.
Lambrecht, Gerhard: *See*—
Heinbockel, Wolfgang; Siewert, Wolfgang; Kahmann, Albrecht; and Lambrecht, Gerhard, 4,283,275, Cl. 209-3.000.
Lamel, Arthur E., to American Petroscience Corporation. Torsional wave generator. 4,283,779, Cl. 367-82.000.
Lampe, Hans H.: *See*—
Drescher, Heinz; Imbusch, Heinrich; and Lampe, Hans H., 4,283,620, Cl. 235-92.0SH.
Lampiridae Associates: *See*—
Gordon, Joseph H.; and Bloch, R. Ramon, 4,283,657, Cl. 315-86.000.
Landstingens Inkopscentral: *See*—
af Ekenstam, Bo T.; and Nordqvist, Erik G. P., 4,282,986, Cl. 222-1.000.
Lane, George A.; and Rossow, Harold E., to Dow Chemical Company, The. Hydrated $Mg(NO_3)_2/NH_4NO_3$ reversible phase change compositions. 4,283,298, Cl. 252-70.000.
Lang, Philip C., to Toms River Chemical Corporation. Process for the manufacture of substantially pure 3-amino-4-alkoxy-acylanilides from 2,4-dinitrochlorobenzene. 4,283,556, Cl. 564-144.000.
Langer, Horst G.: *See*—
Brady, Thomas P.; and Langer, Horst G., 4,283,501, Cl. 525-2.000.
Langham, Maurice E., to Bio-Rad Laboratories, Inc. Apparatus for modifying intraocular pressure. 4,282,882, Cl. 128-676.000.
Lanza, Emmanuel: *See*—
Bracke, William J. I.; and Lanza, Emmanuel, 4,283,506, Cl. 525-309.000.
Large, Donald M.: *See*—
Bankes, Kristen E.; Johnson, Anderson F., Jr.; Large, Donald M.; and Reinhard, Fred J., 4,282,908, Cl. 140-147.000.
Larsen, Donald R. Puzzle type toy. 4,283,055, Cl. 273-160.000.
Lasag S.A.: *See*—
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LaScola, John C.: *See*—
Divers, Edward F.; and LaScola, John C., 4,282,802, Cl. 98-50.000.
Lauba, Andu; and Pettersen, Egil R., to Boeing Company, The. Extended life spool valve. 4,282,900, Cl. 137-625.300.
Laubie, Michel: *See*—
Malen, Charles; Roger, Pierre; and Laubie, Michel, 4,283,407, Cl. 424-270.000.
Lauck, Robert M., to Stauffer Chemical Company. Oxidized whey protein concentrate enriched shortening-containing biscuits. 4,283,435, Cl. 426-551.000.
Laurel Bank Machine Co., Ltd.: *See*—
Miyazaki, Yorizo; and Furuya, Katusuke, 4,282,701, Cl. 53-465.000.
Lauterbach, Jerre F.: *See*—
Glasson, Richard E.; and Lauterbach, Jerre F., 4,282,960, Cl. 192-58.00C.
Lawson, John R. Sequencing camera. 4,283,130, Cl. 354-120.000.
Layton, Margaret M., to Corning Glass Works. Ternary niobate dielectric compositions. 4,283,752, Cl. 361-321.000.
Lazarz, Christine A.: *See*—
Darling, Richard D.; and Lazarz, Christine A., 4,283,264, Cl. 204-252.000.
Lea, Bernard A.; and Burrows, Ronald W., to Minnesota Mining and Manufacturing Company. Thermolabile acutance dyes for dry silver. 4,283,487, Cl. 430-522.000.
Leach, Bruce E., to Conoco, Inc. Process for the synthesis of 2,6-xylenol and 2,3,6-trimethylphenol. 4,283,574, Cl. 568-804.000.
Leber, George W.: *See*—
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Lee, Chin K., to R. J. Reynolds Tobacco Company. Preparation and use of glucose isomerase. 4,283,496, Cl. 435-253.000.
Lee, Larry F., to Rowe International, Inc. Paper currency acceptor. 4,283,708, Cl. 340-146.30Z.
Lee, Lawrence L., to Magnavox Government and Industrial Electronics Company. Method for individually encapsulating magnetic particles. 4,283,438, Cl. 427-47.000.
Le Fur, Jean: *See*—
Saint-Dizier, Gilbert; Le Fur, Jean; and Louboutin, Robert, 4,283,282, Cl. 210-236.000.
Legendre, Michel; and Engelhard, Philippe, to Compagnie Francaise de Raffinage. Hydrocarbon isomerization catalysts and procedures for the preparation and use thereof. 4,283,585, Cl. 585-482.000.
Leger, Gerard: *See*—
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Lehman, Peter G.: *See*—
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Lehmann, Rolf: *See*—
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Christ, Alfred; and Lehmann, Rolf, 4,282,639, Cl. 29-116.0AD.
Leisenberg, Manfred. Method of firing a tunnel kiln with coal, and coal firing installation for tunnel kilns. 4,283,170, Cl. 432-1.000.
Leitner, Joseph. Lawn aerator. 4,282,943, Cl. 175-394.000.
Lems, Peter: *See*—
Massion, Robert J.; Lems, Peter; and Nix, Robert J., 4,282,907, Cl. 140-93.400.
Lermann, Peter: *See*—
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Letraset USA, Inc.: *See*—
Fairhead, Michael J. B.; and Jung, Nicholas R., 4,283,484, Cl. 430-306.000.
Leuenberger, Hans G. W.: *See*—
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Levenson, William L.: *See*—
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Leveque, Jean-Luc; Guiolet, Alain; and Garson, Jean-Claude, to L'Oreal. Dispenser for a liquid product. 4,283,013, Cl. 239-304.000.
Lever Brothers Company: *See*—
Becker, Gert; Oesch, Johann U.; Poeselt, Horst; Tomlinson, Alan D.; and Walz, Kurt, 4,283,299, Cl. 252-90.000.
Foret, Roger; and van der Hoeven, Philippus C., 4,283,302, Cl. 252-102.000.
Soeters, Cornelis J.; Paulussen, Cornelis N.; Padley, Frederick B.; and Tresser, David, 4,283,436, Cl. 426-607.000.
Levi Strauss & Co.: *See*—
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Levin, Harry P., to Electric Power Research Institute, Inc. Hall sensing apparatus. 4,283,643, Cl. 307-309.000.
Levor, Incorporated: *See*—
Ehrlich, Stefan; and Levenson, William L., 4,283,211, Cl. 62-4.000.
Lew, Hyok S. Self-interlocking grille. 4,282,695, Cl. 52-668.000.
Lewinton, Colin H.; and Savit, Joseph, to Domtar Inc. Electrophotographic sheet material. 4,283,473, Cl. 430-64.000.
Lewis, Peter A.: *See*—
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Leybold-Heraeus: *See*—
Thomas, Friedrich W.; and Priess, Konrad, 4,283,260, Cl. 204-192.00R.
Lichti, R. D.; and Reimel, Howard, to Park Mobile, Inc., by said Howard Reimel. Emergency overspeed brake. 4,282,953, Cl. 188-189.000.
Liebermann, Howard H., to General Electric Company. Method for melt puddle control and quench rate improvement in melt-spinning of metallic ribbons. 4,282,921, Cl. 164-463.000.
Lieux, J. Darryl, to Signetics Corporation. Means for reducing current-gain modulation due to differences in collector-base voltages on a transistor pair. 4,283,673, Cl. 323-316.000.
Lillibridge, Harold R., to Champion International Corporation. Reclosable envelope. 4,283,003, Cl. 229-77.000.
Lim-Holding S.A: *See*—
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Linder, Ernst: *See*—
Maurer, Helmut; Muller, Klaus; Rieger, Franz; Linder, Ernst; Dietz, Hermann; Friese, Karl-Hermann; and Ziegler, Bodo, 4,283,261, Cl. 204-195.00S.
Lipschutz, Paul, to Neiman S.A. Anti-theft devices for automobile vehicles. 4,282,730, Cl. 70-184.000.
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Liu, Chao-Min; and Westley, John, to Hoffmann-La Roche Inc. Process of producing antibiotic X-14766A by a streptomyces. 4,283,493, Cl. 435-119.000.
Livera, Phillip A., to Westinghouse Electric Corp. Gob feed dial for dual glass base machine. 4,283,214, Cl. 65-70.000.
Lloyd, Wayne B.; Bernhard, Robert J.; Logan, Dale R.; and Minarik, Ronald W., to United States of America, Air Force. Laser autoalignment system. 4,283,688, Cl. 331-94.50D.
Lockery, Harry E.; and Laimins, Eric, to Hottinger Baldwin Measurements, Inc. Mechanical moment sensitivity compensation in shear beam transducers. 4,282,748, Cl. 73-862.660.
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Longan, Bobby J.: *See*—
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Longmore, Thomas L., to Smith International Inc. Underreamer with ported cam sleeve upper extension. 4,282,942, Cl. 175-269.000.
Longworth, Ruskin, to Du Pont de Nemours, E. I., and Company. Preparation of shaped articles of poly(metaphenylene isophthalamide). 4,283,361, Cl. 264-120.000.
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Jacquet, Bernard; Mondet, Jean; and Papantoniou, Christos, 4,283,384, Cl. 424-47.000.
Leveque, Jean-Luc; Guiolet, Alain; and Garson, Jean-Claude, 4,283,013, Cl. 239-304.000.
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Lott, John W.: *See*—
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Lovelace, Alan M.: *See*—
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Lovelock, Victor G.: *See*—
Chandra, Bala P.; Greaves, Jeffrey C.; and Lovelock, Victor G., 4,283,526, Cl. 528-500.000.
Lowther, Frank E., to Union Carbide Corporation. Corona reaction method and apparatus. 4,283,291, Cl. 250-536.000.
Lucas Industries Limited: *See*—
Pemberton, Donald S., 4,283,104, Cl. 339-97.00R.
Seilly, Alec H.; and Mowbray, Dorian F., 4,282,843, Cl. 123-450.000.
Skinner, Robert T. J., 4,282,844, Cl. 123-502.000.
Williams, David G.; and Harris, Paul A., 4,283,719, Cl. 340-620.000.
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Perricone, Alphonse C.; and Lucas, James M., 4,283,517, Cl. 526-229.000.
Lucero, Andres R.; Williams, David E.; and Nelson, James L., to Summit Systems, Inc. (Interscience Systems). Cash accounting and surveillance system for games. 4,283,709, Cl. 340-147.00R.
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Luck, Allan J.; Clarke, John T.; and Hoffman, Michael R., to Masonite Corporation. Product containing high density skins. 4,283,450, Cl. 428-171.000.
Luk, Kong; Clayton, John P.; and Rogers, Norman H., to Beecham Group Limited. Antibacterial compounds. 4,283,411, Cl. 424-283.000.
Luk, Kong; Clayton, John P.; and Rogers, Norman H., to Beecham Group Limited. Antibacterial compounds. 4,283,412, Cl. 424-283.000.
Lundblad, Leif. Cassette for handling banknotes or the like. 4,283,097, Cl. 312-223.000.
Lundstrom, Claes O. S. Boat hull, material or blank for a boat hull, and a method of producing a boat hull. 4,282,617, Cl. 9-6.00R.
Lupis, Ben. Close-up photography aid. 4,283,135, Cl. 354-293.000.
Lussling, Theodor; Maierhofer, Alfred; and Scherberich, Paul, to Deutsche Gold und- Silber-Scheideanstalt Vormals Roessler. Process for the purification of tryptophane and derivatives of tryptophane. 4,283,337, Cl. 260-326.14T.
Lutz, Andre: *See*—
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Lynn, Robert W., to Becton, Dickinson and Company. Roller bottle. 4,283,495, Cl. 435-240.000.
Lyons, Leon W. Archery bowstring release device. 4,282,851, Cl. 124-35.00A.
Lytle, John M.: *See*—
Peterson, William D.; and Lytle, John M., 4,282,835, Cl. 123-1.00A.
Maa, Peter S.; and Vernon, Lonnie W., to Exxon Research & Engineering Co. Staged temperature hydrogen-donor coal liquefaction process. 4,283,267, Cl. 208-8.0LE.
MacGuire, John C. Multi-terrain vehicle. 4,282,946, Cl. 180-128.000.
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Machi, Sueo; Ishigaki, Isao; Sugo, Takanobu; Murata, Kazuo; Tanso, Shiro; and Senoo, Keizi, to Japan Atomic Energy Research Institute; and Yuasa Battery Co. Ltd. Method of producing a dimensionally stable battery separator. 4,283,442, Cl. 427-171.000.
Machida, Haruo: *See*—
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MacInnis, Martin B.: *See*—
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Grube, William L., 4,282,771, Cl. 74-505.000.
MacMaster, George H.; and Nichols, Lawrence J., to Raytheon Company. Waveguide-to-cylindrical array transition. 4,283,685, Cl. 330-286.000.
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Genest, Leonard J.; and Madenlian, Vache B., 4,283,710, Cl. 340-149.00R.
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Maender, Otto W., to Monsanto Company. Fragrant prevulcanization inhibitors. 4,283,508, Cl. 525-351.000.
Magami, Kozo: *See*—
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Main, William E., to Motorola Inc. Audio bridge circuit. 4,283,683, Cl. 330-262.000.
Makabe, Hachiro: *See*—
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Makino, Yoshihiro, to Shinei Mfg. Co., Ltd. Pilot operated check valve. 4,282,896, Cl. 137-495.000.

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Hulber, Clarence E., Jr., 4,282,988, Cl. 222-184.000.
Mandel, Paul: *See—*
Gardineer, Bayard G.; Heringes, James A.; and Mandel, Paul, 4,282,880, Cl. 128-660.000.
Manoski, Paula M.; and Bone, David P., to Quaker Oats Company, The. Frozen pizza crust and pizza suitable for microwave cooking. 4,283,424, Cl. 426-94.000.
Manseki, Teruo: *See—*
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Maples, Billy G. Hand operated bending apparatus and method for metal bar, tubing and the like. 4,282,737, Cl. 72-388.000.
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Mark, Victor, to General Electric Company. Process for obtaining halogenated diphenols. 4,283,566, Cl. 568-726.000.
Marmon Company: *See—*
Schrencongost, Ray B., 4,282,791, Cl. 84-1.260.
Marq Packaging Systems, Inc.: *See—*
Wingerter, Conrad C.; and Bassett, J. Thomas, 4,283,188, Cl. 493-89.000.
Marsh, James M.: *See—*
Swift, William R.; Herrod, Don W.; and Marsh, James M., 4,283,136, Cl. 355-45.000.
Marshall, Robert M.; and Dardoufas, Kimon C., to Allied Chemical Corporation. Soil resistant yarn finish for synthetic organic polymer yarn. 4,283,292, Cl. 252-8.800.
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Tomcufcik, Andrew S.; Wright, William B., Jr.; and Marsico, Joseph W., Jr., 4,283,334, Cl. 260-245.500.
Martel, Jacques; and Famin, Roger, to Thomson-CSF. Separable microwave coupling and antenna using same. 4,283,727, Cl. 343-710.000.
Martin, Stephen: *See—*
Spence, Lewis C.; and Martin, Stephen, 4,283,726, Cl. 343-112.00D.
Martinez, Anthony, to Texas Instruments Incorporated. Color television receivers. 4,283,739, Cl. 358-24.000.
Martyniuk, Ernest T., to General Motors Corporation. Diesel exhaust filter-incinerator. 4,283,207, Cl. 55-282.000.
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Ueno, Katsuji; and Maruyama, Takashi, 4,283,511, Cl. 525-392.000.
Marvel, John T.: *See—*
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Marvin Glass & Associates: *See—*
Hanson, Steven P.; Schoenfield, Palmer J.; and Disko, Harry, 4,282,674, Cl. 46-39.000.
Kulesza, Ralph J.; Meyer, Burton C.; and Nix, Donald F., 4,282,848, Cl. 124-16.000.
Rosenwinkel, Donald A.; and Disko, Harry, 4,283,127, Cl. 351-158.000.
Zaruba, John V., 4,282,680, Cl. 46-227.000.
Masayuki, Fujise: *See—*
Kazuomi, Yamamura; Takasuke, Fukui; Yoshinao, Iwamoto; Yuichi, Shirasaki; Masayuki, Fujise; Hikoaki, Sugimoto; Kikuo, Shirai; and Minoru, Yoshida, 4,283,681, Cl. 324-326.000.
Mashburn, Harry G., to Blue Ridge Industrial Technologies, Inc. Stock lifter. 4,282,736, Cl. 72-345.000.
Masonite Corporation: *See—*
Luck, Allan J.; Clarke, John T.; and Hoffman, Michael R., 4,283,450, Cl. 428-171.000.
Massachusetts Institute of Technology: *See—*
Kaplow, Roy; and Frank, Robert I., 4,283,589, Cl. 136-249.000.
Raffai, Jack I.; and Bernacki, Stephen E., 4,283,235, Cl. 148-175.000.
Massey-Ferguson Inc.: *See—*
Van Dest, Jean-Claude, 4,282,775, Cl. 74-740.000.
Massey, Gail A.: *See—*
Elliott, Richard A.; Massey, Gail A.; and Shaw, John B., 4,283,122, Cl. 350-379.000.
Massion, Robert J.; Lems, Peter; and Nix, Robert J., to Signode Corporation. Tension sensing mechanism for strapping tool. 4,282,907, Cl. 140-93.400.
Masson, Pierre L.; and Heremans, Joseph F., to Technicon Instruments Corporation. Analysis of biological fluids. 4,283,383, Cl. 424-12.000.
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Koeppe, Werner; Bohnenstingl, Josef; and Mastera, Stanislaus G. J., 4,283,367, Cl. 422-159.000.
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Masunaga, Makoto: *See—*
Tsunekawa, Tokuichi; Masunaga, Makoto; Hosoe, Kazuya; Niwa, Yukichi; Owada, Mitsutoshi; and Asano, Noriyuki, 4,283,137, Cl. 356-4.000.
Masur, Klaus: *See—*
Reiff, Karl; Wagner, Wolfgang; and Masur, Klaus, 4,282,654, Cl. 33-1.00M.
Mathews, Larry, to Alleghany Pharmacal. Hair removing arrangement. 4,282,877, Cl. 128-355.000.
Mathieu, Pierre: *See—*
Voirin, Robert; Mathieu, Pierre; and Chambu, Claude, 4,283,380, Cl. 423-574.00R.
Matsubara, Akira; Sakai, Hideaki; Suganuma, Toshio; Fukazawa, Nobuyuki; and Nakano, Takuo, to Mitsui Toatsu Chemicals, Inc. Cephalosporins. 4,283,398, Cl. 424-246.000.
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Koizumi, Hisao; Kawada, Yoshinosuke; and Matsui, Koichi, 4,282,860, Cl. 126-429.000.
Matsui Universal Joint Mfg. Co.: *See—*
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Matsumoto, Masaharu: *See—*
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Matsumoto, Masanori: *See—*
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Matsumura, Isao, to Canon Kabushiki Kaisha. Eye fundus camera. 4,283,124, Cl. 351-7.000.
Matsunami, Muneharu; Saito, Toshio; Yoshida, Akio; and Inokuchi, Nobuyuki, to Toyota Jidosha Kogyo Kabushiki Kaisha; and Kabushiki Kaisha Tokai Rika Denki Seisakusho. Seatbelt system. 4,283,076, Cl. 280-806.000.
Matsuo, Masashi: *See—*
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Matsuoka, Hideoki: *See—*
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Matsushima, Masaru; Komai, Takeshi; and Nakayama, Masaharu, to Nippon Oil and Fats Co., Ltd. Copolymer having peroxy bonds in the molecule thereof and a process for producing the same. 4,283,512, Cl. 525-438.000.
Matsushita Electric Industrial Co., Ltd.: *See—*
Nakajima, Shoji, 4,283,605, Cl. 179-110.00A.
Tanaka, Junzo; Kai, Toshio; and Kurita, Hitoshi, 4,283,614, Cl. 219-10.55R.
Matsushita, Sachio: *See—*
Hirai, Hiroyuki; Matsushita, Sachio; Tsuyuki, Isao; and Watase, Kazumi, 4,283,266, Cl. 204-263.000.
Matsuyama, Kiyoshi: *See—*
Shiga, Akinobu; Matsuyama, Kiyoshi; Kakugo, Masahiro; Naito, Yukio; and Ima, Seiichiro, 4,283,463, Cl. 428-512.000.
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Maurer, Helmut; Muller, Klaus; Rieger, Franz; Linder, Ernst; Dietz, Hermann; Friese, Karl-Hermann; and Ziegler, [illegible]o, to Robert Bosch GmbH. Electrochemical sensor structure to determine oxygen content in combustion exhaust gases. 4,283,261, Cl. 204-195.00S.
Maus, L. Donald; Speers, Jerry M.; and Howell, James D., to Exxon Production Research Company. Method and apparatus for compensating well control instrumentation for the effects of vessel heave. 4,282,939, Cl. 175-7.000.
Mausezahl, Dieter: *See—*
Seitz, Karl; and Mausezahl, Dieter, 4,283,331, Cl. 260-153.000.
Maxi-Tronic, Inc.: *See—*
Boling, Harry O.; and Brzycki, Larry R., 4,282,967, Cl. 198-571.000.
Maximov, Vladimir P.: *See—*
Tabakov, Vladimir P.; Kornev, Boris P.; Buchenkov, Leonid N.; Gorbunov, Andrei T.; Kaschavtsev, Vladilen E.; Pilatovsky, Viktor P.; Gurov, Evgeny I.; Obrezkov, Alexandr I.; Vakhitov, Gadel G.; Bulgakov, Rishad T.; Maximov, Vladimir P.; Maxutov, Rafkhat A.; Shnirelman, Alexandr I.; Dobroskok, Boris E.; Asfandiyarov, Khalim A.; and Fatkullin, Airat K., deceased, 4,283,088, Cl. 299-2.000.
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Mayhew, Raymond L.: *See—*
O'Lenick, Anthony J., Jr.; and Mayhew, Raymond L., 4,283,542, Cl. 548-112.000.
Mazza, Raymond L.; Dahl, H. Douglas; and Umphrey, Ronald W., to Conoco, Inc. Pretreatment for fracturing coal seams. 4,283,089, Cl. 299-16.000.
McBee, Steve H., to Deere & Company. Picker drum slip clutch monitor. 4,282,702, Cl. 56-10.300.
McBride, Edward F.: *See—*
Sheehan, Maurice J., 4,283,034, Cl. 248-263.000.
McCann, Pamela A.: *See—*
Pogell, Burton M.; and McCann, Pamela A., 4,283,391, Cl. 424-122.000.
McCarroll, Raymond A., to Herder N.V. Tilted axle caster. 4,282,628, Cl. 16-18.00A.
McCaslin, Robert E. Electronic wand. 4,282,681, Cl. 46-228.000.
McClintic, Robert P.: *See—*
Vanderpool, Clarence D.; and McClintic, Robert P., 4,283,258, Cl. 204-102.000.

McClure, Robert B.: *See*—
Holtman, Robert L.; and McClure, Robert B., 4,282,837, Cl. 123-193.00P.
McCombie, Stuart W.: *See*—
Ganguly, Ashit K.; Girijavallabhan, Viyyoor M.; Cavender, Patricia; Sarre, Olga; and McCombie, Stuart W., 4,283,531, Cl. 544-30.000.
McDonald, Charles J.; Van Landingham, John V.; and Givens, Steven P., to Dow Chemical Co., The. Method for controlling permeability of subterranean formations. 4,282,928, Cl. 166-274.000.
McDonnell Douglas Corporation: *See*—
Downing, James W., 4,282,627, Cl. 16-2.000.
McGee, James N., to Burlington Industries, Inc. Production of cover fabrics for V belts which function as wear indicators due to different layer characteristics. 4,283,455, Cl. 428-240.000.
McGraw-Edison Company: *See*—
Date, Kazuo H.; and Wainio, Ronald A., 4,283,610, Cl. 200-146.00R.
McHale, William D., to Mobil Oil Corporation. Process for removing sulfur from petroleum oils. 4,283,270, Cl. 208-50.000.
McKay, Dwight L.; and Bertus, Brent J., to Phillips Petroleum Company. Process for cracking hydrocarbons with a cracking catalyst passivated with thallium. 4,283,274, Cl. 208-120.000.
McKibbin, John R.; and Tyler, Frederick B., Jr. Apparatus for guiding a tool along a curved path. 4,283,044, Cl. 266-67.000.
McLain, Philippe H., to Shakespeare Company. Fiber reinforced plastic members. 4,283,446, Cl. 428-36.000.
McLandrich, Matthew N., to United States of America, Navy. Method of fiber interferometry zero fringe shift referencing using passive optical couplers. 4,283,144, Cl. 356-350.000.
McLellan, Norvel J. Band type plant transplanter. 4,282,684, Cl. 47-73.000.
Mead Corporation, The: *See*—
Bok, Dennis E.; Bridge, Patrick E.; Coulter, Robert W.; Denlinger, George W.; Fernalld, Clifford S., Jr.; Hill, Charlie H., Jr.; Huliba, David A.; Meckstroth, James R.; and Scranton, Robert J., 4,283,731, Cl. 346-75.000.
Embro, Joseph J., Jr., 4,282,699, Cl. 53-298.000.
Mead, Harold C., to Nixdorff Krein Industries, Inc. Grain bin floor support system. 4,282,694, Cl. 52-508.000.
Mechanex Corporation, The: *See*—
Prescott, David B., 4,283,063, Cl. 277-37.000.
Meckstroth, James R.: *See*—
Bok, Dennis E.; Bridge, Patrick E.; Coulter, Robert W.; Denlinger, George W.; Fernalld, Clifford S., Jr.; Hill, Charlie H., Jr.; Huliba, David A.; Meckstroth, James R.; and Scranton, Robert J., 4,283,731, Cl. 346-75.000.
Medland, Thomas M.: *See*—
Kafura, Frederick G.; and Medland, Thomas M., 4,282,963, Cl. 192-133.000.
Medtronic, Inc.: *See*—
King, Wendell L., 4,282,886, Cl. 128-785.000.
Meer, Vadim V.: *See*—
Bylinsky, Lev V.; Gavrilenko, Vladimir I.; Glumov, Ivan F.; Denisov, Vasily F.; and Meer, Vadim V., 4,283,763, Cl. 364-449.000.
Meheen, H. Joe. Precast building construction. 4,282,690, Cl. 52-79.110.
Meiji Seika Kaisha Ltd.: *See*—
Ezaki, Norio; Miyadoh, Shinji; Ogawa, Yasuaki; Hisamatsu, Takashi; Fukuyashu, Harumi; and Yamada, Yujiro, 4,283,389, Cl. 424-116.000.
Meindl, Gerhard: *See*—
Ehrgott, Roland; and Meindl, Gerhard, 4,283,699, Cl. 336-67.000.
Meisenburg, Ewald: *See*—
Keim, Karl-Heinz; Kiauk, Reinhard; and Meisenburg, Ewald, 4,283,571, Cl. 568-783.000.
Meissner, Bruno: *See*—
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Meito Sangyo Kabushiki Kaisha: *See*—
Kokusho, Yoshitaka; Machida, Haruo; and Iwasaki, Shinjiro, 4,283,494, Cl. 435-198.000.
Melcher, Gerhard; and Weigel, Horst, to Klockner-Humboldt-Deutz AG. Apparatus for the continuous recovery of tin from iron rich concentrates. 4,283,045, Cl. 266-162.000.
Melcher, Robert L.; Romankiw, Lubomyr T.; and von Gutfeld, Robert J., to International Business Machines Corporation. Method for maskless chemical and electrochemical machining. 4,283,259, Cl. 204-129.300.
Melvin, Lawrence S., Jr.: *See*—
Althuis, Thomas H.; Harbert, Charles A.; Johnson, Michael R.; and Melvin, Lawrence S., Jr., 4,283,569, Cl. 568-764.000.
Melwisch, Harald E.; and Susz, Dietfried, to U.S. Philips Corporation. Video reproducing apparatus with variable delay means. 4,283,744, Cl. 360-10.000.
Menezes, William A.: *See*—
Kuper, Douglas D.; and Menezes, William A., 4,283,745, Cl. 360-13.000.
Menz, Fredric L.; and Greene, Gordon A., to United States of America, Navy. Dual-end warhead initiation system. 4,282,814, Cl. 102-318.000.
Merck & Co., Inc.: *See*—
Field, Arthur K.; and Harwood, Richard J., 4,283,393, Cl. 424-180.000.
Hannah, John, 4,283,397, Cl. 424-246.000.
Hannah, John, 4,283,402, Cl. 424-256.000.
Merklinger, Richard. Prefabricated house. 4,282,693, Cl. 52-282.000.
Merrell, Jimmy D., to United States of America, Army. Method and apparatus for non-destructive testing of beam-lead integrated circuit connections. 4,282,759, Cl. 73-827.000.
Merrick, George J.; Cook, George E.; and Modglin, Donald D., to Merrick Welding International, Inc. Automatic pipe welding system. 4,283,617, Cl. 219-125.100.
Merrick Welding International, Inc.: *See*—
Merrick, George J.; Cook, George E.; and Modglin, Donald D., 4,283,617, Cl. 219-125.100.
Merrill, Stewart H.: *See*—
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Merten, Rudolf: *See*—
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Mesek, Frederick K., to Johnson & Johnson Baby Products Company. Disposable absorbent article of manufacture. 4,282,874, Cl. 128-287.000.
Messier, Dennis G.: *See*—
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Metaalgieterij G. Giesen, B.V.: *See*—
Giesen, Gerardus J., 4,282,833, Cl. 122-158.000.
Metal Works Ramat David: *See*—
Arzi, Amatzia; and Chiel, David, 4,283,010, Cl. 239-1.000.
Meyer, August R.: *See*—
Catanzaro, James R.; Meyer, August R.; and Willis, David L., 4,283,062, Cl. 277-12.000.
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Kulesza, Ralph J.; Meyer, Burton C.; and Nix, Donald F., 4,282,848, Cl. 124-16.000.
Meyer, Herbert J.; and Smitherman, Thomas L., to Texaco Inc. Programmable seismic cable. 4,283,778, Cl. 367-58.000.
Meyer, Juergen; and Schaaf, Norbert, to Heimann GmbH. Contactless conductance potentiometer. 4,283,702, Cl. 338-15.000.
Meyer, Nicolas; and Schuller, Leon, to Societe Chimiques des Charbonnages. Phenolic laminates with furan resin coating. 4,283,462, Cl. 428-506.000.
Meyer, Raymond A.; and Freestone, Frank J., to United States of America, U.S. Environmental Protection Agency. Photomicrographic system for flowing fluids. 4,283,128, Cl. 354-79.000.
Meyer, Robert, to Commissariat l'Energie. Electrolytic display cells with a metal deposit. 4,283,121, Cl. 350-363.000.
Meyers, Bernard L.: *See*—
Udovich, Carl A.; and Meyers, Bernard L., 4,283,288, Cl. 252-437.000.
Meyers, George L., to American Can Company. Tubular carton with polygonal cross-section. 4,283,001, Cl. 229-37.00R.
Meyst, Richard P.; and Porten, Ronald M., to Baxter Travenol Laboratories, Inc. Blood filter for leukocytes. 4,283,289, Cl. 210-448.000.
Michel, Bertrand, to Societe Nord-France d'Entreprises, Genesales et de Constructions en beton arne, FRX. Method for fabricating and erecting unitary structural elements. 4,282,696, Cl. 52-745.000.
Michel, Wolfgang: *See*—
Becker, Reinhold; and Michel, Wolfgang, 4,282,904, Cl. 138-109.000.
Michigan Technological University: *See*—
Kilpela, Tauno B.; and Haataja, Bruce A., 4,282,910, Cl. 144-3.00K.
Microwave Development Laboratories: *See*—
Wilson, Ronald A., 4,282,649, Cl. 29-600.000.
Miffitt, Donald C., to Gillette Company, The. Battery operated portable hydromassage appliance. 4,282,866, Cl. 128-66.000.
Mikami, Ryuzo, to Toray Silicone Company, Ltd. Siloxane-modified epoxy resin composition. 4,283,513, Cl. 525-476.000.
Milchem Incorporated: *See*—
Perricone, Alphonse C.; and Lucas, James M., 4,283,517, Cl. 526-229.000.
Mildenberger, Hilmar: *See*—
Knorr, Harald; Maier, Thomas; Mildenberger, Hilmar; and Korbanka, Helmut, 4,283,545, Cl. 548-262.000.
Miles Laboratories, Inc.: *See*—
Schut, Robert N.; Safdy, Max E.; and Hong, Enrique, 4,283,336, Cl. 260-326.14R.
Schut, Robert N.; Safdy, Max E.; and Hong, Enrique, 4,283,410, Cl. 424-274.000.
Miller, Avy L., deceased; by Miller, Roberta L., deceased; and Miller-Lerman, Lindsey. Self-propelled off-road vehicle. 4,282,794, Cl. 89-36.00M.
Miller, Douglas C.; and Wolfe, Terry W., to Westvaco Corporation. Thermoplastic film extrusion apparatus. 4,283,168, Cl. 425-465.000.
Miller, Franklin C. Process for simulating game of golf. 4,283,056, Cl. 273-176.00A.
Miller-Lerman, Lindsey: *See*—
Miller, Avy L., deceased; Miller, Roberta L., deceased; and Miller-Lerman, Lindsey, 4,282,794, Cl. 89-36.00M.
Miller, Robert J., to Colt Industries Operating Corp. Tamper proof sealing plug. 4,283,353, Cl. 261-41.00D.
Miller, Roberta L., deceased: *See*—
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Milliken Research Corporation: *See*—
Engels, Walter, 4,282,635, Cl. 26-16.000.
Marco, Francis W., 4,283,452, Cl. 428-206.000.

Mills, Walter C.; and Patterson, James W., to Northern Natural Gas Company. Pressure-operated portable siphon apparatus for removing concentrations of liquid from a gas pipeline. 4,282,894, Cl. 137-15.000.

Mills, William R., Jr., to Mobil Oil Corporation. Epithermal neutron decay logging. 4,283,624, Cl. 250-264.000.

Minamidate, Makoto, to Yokosuka Boat Kabushiki Kaisha. Vibration insulation device for handle of vibratory machine. 4,282,938, Cl. 173-162.00H.

Minarik, Ronald W.: *See*—
Lloyd, Wayne B.; Bernhard, Robert J.; Logan, Dale R.; and Minarik, Ronald W., 4,283,688, Cl. 331-94.50D.

Minn, James, to Boots Hercules Agrochemicals Co. Process for producing dialkyl dithiophosphoric acid esters. 4,283,335, Cl. 260-326.00E.

Minn, James, to Boots Hercules Agrochemicals Co. Process for producing O,O-dialkyl dithiophosphoric acid esters. 4,283,338, Cl. 260-326.00E.

Minnesota Mining and Manufacturing Company: *See*—
Lea, Bernard A.; and Burrows, Ronald W., 4,283,487, Cl. 430-522.000.

Minorikawa, Kazuo: *See*—
Kita, Yuzo; Yamaguchi, Noboru; Shibukawa, Masaru; and Minorikawa, Kazuo, 4,283,760, Cl. 364-200.000.

Minoru, Yoshida: *See*—
Kazuomi, Yamamura; Takasuke, Fukui; Yoshinao, Iwamoto; Yuichi, Shirasaki; Masayuki, Fujise; Hikoaki, Sugimoto; Kikuo, Shirai; and Minoru, Yoshida, 4,283,681, Cl. 324-326.000.

Minoura, Mikio, to Aisan Industry Co., Ltd. Exhaust gas recirculating device. 4,282,846, Cl. 123-568.000.

Mirabelli, Bruno, to Industrie Pirelli S.p.A. Cover for electrolytic cells. 4,283,263, Cl. 204-219.000.

Miro, Juan C., to Industria Espanola de Manufacturas Especiales, S.A. (IEMESA). Racking mechanism for bobbin machine. 4,282,956, Cl. 192-4.00R.

Mirzoev, Alexandr G.: *See*—
Anosov, Oleg V.; Mirzoev, Alexandr G.; and Obraztsov, Jury V., 4,283,595, Cl. 174-73.00R.

Misangyi, Laszlo: *See*—
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Mitchell, Cheryl R.: *See*—
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Mitchell, John L. A.: *See*—
Mitchell, William A.; Mitchell, John L. A.; and Mitchell, Cheryl R., 4,283,432, Cl. 426-466.000.

Mitchell, William A.; Mitchell, John L. A.; and Mitchell, Cheryl R. Natural beverage powders from dahlia extracts. 4,283,432, Cl. 426-466.000.

Mitsubishi Jukogyo Kabushiki Kaisha: *See*—
Yamasaki, Koyu; and Iino, Yousuke, 4,282,643, Cl. 29-527.200.

Mitsui Petrochemical Industries Ltd.: *See*—
Nakagawa, Hiroaki; Hirowatari, Noriyuki; and Nakamura, Takayuki, 4,283,570, Cl. 568-768.000.
Nambu, Hirohiko; Nakagawa, Hiroaki; and Isibasi, Masayasu, 4,283,567, Cl. 568-754.000.

Mitsui Toatsu Chemicals, Inc.: *See*—
Matsubara, Akira; Sakai, Hideaki; Suganuma, Toshio; Fukazawa, Nobuyuki; and Nakano, Takuo, 4,283,398, Cl. 424-246.000.

Miyadoh, Shinji: *See*—
Ezaki, Norio; Miyadoh, Shinji; Ogawa, Yasuaki; Hisamatsu, Takashi; Fukuyashu, Harumi; and Yamada, Yujiro, 4,283,389, Cl. 424-116.000.

Miyamori, Tamotsu: *See*—
Kaji, Hisatsugu; Kameyama, Iwawo; Hamaguti, Takashi; and Miyamori, Tamotsu, 4,283,369, Cl. 422-193.000.

Miyamura, Nobuhiro: *See*—
Takigawa, Hiroyoshi; Miyamura, Nobuhiro; Ogawa, Hiroshi; and Ohkuni, Shinichiro, 4,282,914, Cl. 152-209.00D.

Miyashita, Kiyoshi. Dispenser for granular material. 4,282,990, Cl. 222-339.000.

Miyauchi, Toshimitsu; and Tsunoda, Yoshito, to Hitachi, Ltd. Optical information recording apparatus. 4,283,785, Cl. 369-116.000.

Miyazaki, Yorizo; and Furuya, Katsuke, to Laurel Bank Machine Co., Ltd. Method of setting packaging paper in coin packaging machine. 4,282,701, Cl. 53-465.000.

Miyazawa, Takashi, to Kirin Beer Kabushiki Kaisha. Optical system for the detection of flaws in bottles or the like. 4,283,145, Cl. 356-364.000.

Miyoshi, Tadayoshi; and Kashiwagi, Shigeru, to Victor Company of Japan, Ltd. Horizontal deflection circuit in a television device. 4,283,663, Cl. 315-400.000.

Mizumoto, Katsuji: *See*—
Kominami, Yasuo; Yamamura, Masahiro; Mizumoto, Katsuji; and Hanada, Toshihide, 4,283,674, Cl. 323-313.000.

Mizumoto, Katsuzi, to Pioneer Electronic Corporation. Method and apparatus for eliminating ripple component from motor control loop. 4,283,665, Cl. 318-317.000.

Mobil Oil Corporation: *See*—
Chester, Arthur W.; and Chu, Yung F., 4,283,584, Cl. 585-481.000.
Garwood, William E.; and Silk, Murray R., 4,283,271, Cl. 208-59.000.
Garwood, William E.; and Silk, Murray R., 4,283,272, Cl. 208-59.000.
McHale, William D., 4,283,270, Cl. 208-50.000.
Mills, William R., Jr., 4,283,624, Cl. 250-264.000.
Owen, Hartley, 4,283,273, Cl. 208-113.000.
Schick, John W.; Davis, Robert H.; and Andress, Harry J., 4,283,293, Cl. 252-32.000.
Young, Lewis B., 4,283,573, Cl. 568-794.000.

Mochida, Shigeru; and Ogasawara, Takayuki, to NGK Insulators, Ltd. Ceramic honeycomb filter and a method of producing the same. 4,283,210, Cl. 55-523.000.

Mode, Duane R., to Champion International Corporation. Self opening carton. 4,283,002, Cl. 229-41.00R.

Modglin, Donald D.: *See*—
Merrick, George J.; Cook, George E.; and Modglin, Donald D., 4,283,617, Cl. 219-125.100.

Moen, Lenard E. H-divider containers. 4,282,999, Cl. 229-15.000.

Molins, Desmond W.; and Soborowski, Michael J., to Molins Limited. Apparatus for forming composite rods. 4,283,187, Cl. 493-48.000.

Molins Limited: *See*—
Molins, Desmond W.; and Soborowski, Michael J., 4,283,187, Cl. 493-48.000.

Molins Machine Company, Inc.: *See*—
Woolston, A. Brent; and Evans, Donald J., 4,283,185, Cl. 493-15.000.

Molnar, Albert J.; Wolff, Fred H.; and Ramey, Donald G., to Westinghouse Electric Corp. Apparatus for estimating the strain on an inaccessible portion of a rotating shaft. 4,282,756, Cl. 73-650.000.

Momose, Yutaka; and Nakamura, Kazuaki, to Aisin Seiki Kabushiki Kaisha. Stirling cycle refrigerator. 4,282,716, Cl. 62-6.000.

Mona Industries: *See*—
O'Lenick, Anthony J., Jr.; and Mayhew, Raymond L., 4,283,542, Cl. 548-112.000.

Mondet, Jean: *See*—
Jacquet, Bernard; Mondet, Jean; and Papantoniou, Christos, 4,283,384, Cl. 424-47.000.

Monotype Corporation Limited, The: *See*—
Throssell, Raymond W., 4,283,672, Cl. 318-696.000.

Monrolin, Jean L.; and Vachee, Pierre, to International Business Machines Corp. Data transmission method and devices for practicing said method. 4,283,789, Cl. 375-55.000.

Monsanto Company: *See*—
D'Amico, John J.; and Marvel, John T., 4,283,220, Cl. 71-90.000.
Maender, Otto W., 4,283,508, Cl. 525-351.000.

Montanwerke Walter GmbH: *See*—
Grafe, Werner; and Schlotterer, Willy, 4,283,163, Cl. 407-104.000.

Montreal General Hospital Research Inst.: *See*—
Zidulka, Arnold, 4,282,869, Cl. 128-200.280.

Mooberry, Jared B.: *See*—
Gompf, Thomas E.; Hammond, Howell A.; and Mooberry, Jared B., 4,283,472, Cl. 430-17.000.

MOOG GmbH: *See*—
Handte, Herbert; and Kollmar, Friedrich, 4,283,637, Cl. 307-228.000.

Morgan, Cyril: *See*—
Goebel, Franz; and Morgan, Cyril, 4,283,468, Cl. 429-81.000.

Moriguchi, Hiroyuki: *See*—
Kaneko, Tadashi; Shimura, Takeo; Matsumoto, Masanori; Moriguchi, Hiroyuki; and Nomori, Hiroyuki, 4,283,474, Cl. 430-69.000.

Moriguchi, Soyao: *See*—
Inoue, Chozo; and Moriguchi, Soyao, 4,283,554, Cl. 562-574.000.

Morimoto, Toru; Ohsaki, Tsuyoshi; Ohkawa, Toshio; and Matsuzawa, Kenji, to Nippon Dia Clevite Co., Ltd. Porous body of aluminum or its alloy and a manufacturing method thereof. 4,283,465, Cl. 428-566.000.

Morin, Andre M. R., to SOVAM. Body for vehicles and vehicles carrying said body. 4,283,086, Cl. 296-178.000.

Morino, Daizou: *See*—
Imanaka, Hiroshi; Hosoda, Junzi; Jomon, Kazuyoshi; Sakai, Heiichi; Ueda, Ikuo; and Morino, Daizou, 4,283,492, Cl. 435-47.000.

Morio, Minoru; Nakamura, Tadahiko; Kambara, Masahiro; and Kubota, Yukio, to Sony Corporation. Video signal reproducing apparatus for converting a video signal from a first format to a second format. 4,283,736, Cl. 358-4.000.

Morishita, Hirosada: *See*—
Takahashi, Akio; Itoh, Yutaka; Wajima, Motoyo; Morishita, Hirosada; and Tsukanishi, Kenji, 4,283,522, Cl. 528-170.000.

Morita, Shinzo: *See*—
Hattori, Shuzo; and Morita, Shinzo, 4,283,482, Cl. 430-296.000.

Moritz, Alfred: *See*—
Regler, Dieter; Meissner, Bruno; and Moritz, Alfred, 4,283,242, Cl. 156-154.000.

Moriya, Takahiko: *See*—
Higashinakagawa, Iwao; Sima, Syohei; and Moriya, Takahiko, 4,283,439, Cl. 427-89.000.

Morton-Norwich Products, Inc.: *See*—
Booth, David L.; and Rodebaugh, Richard M., 4,283,543, Cl. 548-138.000.

Moser, Roland; and Renner, Alfred, to Ciba-Geigy Corporation. Storage-stable, homogeneous mixture containing epoxide resin, curing agent and curing accelerator, and the use of the mixture for producing cured products. 4,283,520, Cl. 528-93.000.

Moss, Anthony R. L.: *See*—
Stockdale, Trevor J.; and Moss, Anthony R. L., 4,283,141, Cl. 356-246.000.

Mosseri, Giuseppe; and Lucioni, Enrico, to Snia Viscosa Societa' Nazionale Industria Applicazioni Viscosa S.p.A. Nozzle for the texturization of yarns. 4,282,637, Cl. 28-254.000.

Mossman, Ralph A.; and Stinger, Kenneth P., to Tektronix, Inc. Cathode ray tube with multiple internal graticules. 4,283,655, Cl. 313-462.000.

Motorola Inc.: *See*—
Bickley, Robert H.; and Genrich, Thad J., 4,283,723, Cl. 340-722.000.
Hughes, Mark F., 4,283,796, Cl. 455-349.000.
Kaiser, Theodore, 4,283,743, Cl. 358-248.000.
Main, William E., 4,283,683, Cl. 330-262.000.
Tarbouriech, Jean-Claude, 4,283,690, Cl. 331-111.000.
Mowbray, Dorian F.: *See*—
Seilly, Alec H.; and Mowbray, Dorian F., 4,282,843, Cl. 123-450.000.
Muchnick, Samuel N., to Research Development Systems, Inc. Composite drum head. 4,282,793, Cl. 84-414.000.
Muenz, Wolf-Dieter; and Poetzlberger, Hans W., to Siemens Aktiengesellschaft. Conductor crossovers for integrated RC-circuits. 4,283,485, Cl. 430-314.000.
Muller, Hans, to Heidelberger Druckmaschinen AG. Device for separating out folded spoiled copies in web-fed rotary printing machines. 4,283,048, Cl. 271-302.000.
Muller, Klaus: *See*—
Maurer, Helmut; Muller, Klaus; Rieger, Franz; Linder, Ernst; Dietz, Hermann; Friese, Karl-Hermann; and Ziegler, Bodo, 4,283,261, Cl. 204-195.00S.
Mullican, Vernon T.: *See*—
Herd, William H., Jr.; Curtis, Stanley F.; Mullican, Vernon T.; and Jones, Robert W., 4,283,355, Cl. 261-44.00F.
Muncke, Ludwig: *See*—
Kauss, Wolfgang; and Muncke, Ludwig, 4,283,087, Cl. 296-190.000.
Mune, Isao: *See*—
Musa, Yoshikazu; and Mune, Isao, 4,283,318, Cl. 260-28.50B.
Muntwyler, Rene: *See*—
de Sousa, Bernardo; Muntwyler, Rene; and Schmid, Werner, 4,283,444, Cl. 427-421.000.
Murakawa, Masao: *See*—
Maeda, Teizo; and Murakawa, Masao, 4,282,996, Cl. 225-2.000.
Murase, Ichiki: *See*—
Tsutsui, Nobuhiro; Takao, Seiji; and Murase, Ichiki, 4,283,359, Cl. 264-22.000.
Murata, Kazuo: *See*—
Machi, Sueo; Ishigaki, Isao; Sugo, Takanobu; Murata, Kazuo; Tanso, Shiro; and Senoo, Keizi, 4,283,442, Cl. 427-171.000.
Murata Manufacturing Co., Ltd.: *See*—
Heinouchi, Yoshiaki, 4,283,649, Cl. 310-324.000.
Tatsumi, Tetsuo, 4,283,751, Cl. 361-293.000.
Murphy, Charles V.; and Statz, Robert J., to Du Pont de Nemours, E. I., and Company. Wax-free, hot melt adhesive compositions. 4,283,317, Cl. 260-27.00R.
Musa, Yoshikazu; and Mune, Isao, to Nitto Electric Industrial Co., Ltd. Non-aqueous composite gel and process for production thereof. 4,283,318, Cl. 260-28.50B.
Muschelknautz, Hortz, deceased: *See*—
Sauka, Klaus; and Muschelknautz, Hortz, deceased, 4,283,092, Cl. 303-3.000.
Muschelknautz, Ingeborg, heiress: *See*—
Sauka, Klaus; and Muschelknautz, Hortz, deceased, 4,283,092, Cl. 303-3.000.
Mutzel, Wolfgang: *See*—
Speck, Ulrich; Klieger, Erich; and Mutzel, Wolfgang, 4,283,381, Cl. 424-5.000.
N. Greening Limited: *See*—
Savage, Norman; and Sumner, Douglas A., 4,283,278, Cl. 209-395.000.
N. P. Halenbeck Company: *See*—
Hallenbeck, Norman P.; and Willard, Stephen F., 4,282,739, Cl. 72-449.000.
Naar, Raymond Z.: *See*—
Kolsky, Rodger E.; and Naar, Raymond Z., 4,283,457, Cl. 428-285.000.
Nagabhushan, Tattanahalli L.: *See*—
Daniels, Peter J. L.; and Nagabhushan, Tattanahalli L., 4,283,528, Cl. 536-17.00R.
Nagahara, Shusaku: *See*—
Izumita, Morishi; Umemoto, Masuo; Sato, Kazuhiro; Akiyama, Toshiyuki; Takahashi, Kenji; and Nagahara, Shusaku, 4,283,742, Cl. 358-213.000.
Nagamoto, Itsushi, to Nippon Gakki Seizo Kabushiki Kaisha. Racket frame. 4,283,050, Cl. 273-73.00K.
Nagano, Mineo: *See*—
Iwashita, Toru; Nagano, Mineo; and Tanaka, Koji, 4,283,518, Cl. 526-237.000.
Nagao, Morimasa: *See*—
Ito, Susmu; and Nagao, Morimasa, 4,283,679, Cl. 324-165.000.
Nagata, Wataru: *See*—
Yoshioka, Mitsuru; Hamashima, Yoshio; and Nagata, Wataru, 4,283,333, Cl. 260-239.00A.
Nagatomo, Hiroto; Takagaki, Tetsuya; Seki, Hisao; Terasaki, Shirou; and Horimuki, Hitoshi, to Hitachi, Ltd. Surface treatment device. 4,282,825, Cl. 118-58.000.
Nagelkerke, Willem, to B.V. Scheepswerf en Reparatie bedrijf "Breebot". Towing suction device for a dredging craft. 4,282,661, Cl. 37-58.000.
Naito, Kyohei, to Shinwa Kabushiki Kaisha. Tape feeder in a tape recorder. 4,283,027, Cl. 242-208.000.
Naito, Yukio: *See*—
Shiga, Akinobu; Matsuyama, Kiyoshi; Kakugo, Masahiro; Naito, Yukio; and Ima, Seiichiro, 4,283,463, Cl. 428-512.000.
Nakada, Akira: *See*—
Yamaga, Eiichi; Iio, Junji; Takeda, Toshio; Nakada, Akira; and Imamura, Akio, 4,282,788, Cl. 84-1.030.
Nakagawa, Hiroaki; Hirowatari, Noriyuki; and Nakamura, Takayuki, to Mitsui Petrochemical Industries Ltd. Process for preparing resorcinol. 4,283,570, Cl. 568-768.000.
Nakagawa, Hiroaki: *See*—
Nambu, Hirohiko; Nakagawa, Hiroaki; and Isibasi, Masayasu, 4,283,567, Cl. 568-754.000.
Nakagawa, Seiichi; and Ikeda, Takayoshi, to Nihon Denshi Kabushiki Kaisha. Electron beam aperture device. 4,283,632, Cl. 250-503.000.
Nakai, Toshio: *See*—
Hanazono, Masami; Watanabe, Tomoyoshi; Nakai, Toshio; Kuzuya, Susumu; Asai, Akira; Iwase, Takayuki; Nakamura, Kazuo; and Onoda, Hiroshi, 4,283,150, Cl. 400-666.000.
Nakajima, Akira; Ichikawa, Akira; and Nakata, Kazuo, to Hitachi, Ltd. Preprocessing method and device for speech recognition device. 4,283,601, Cl. 179-1.0SD.
Nakajima, Fumio; Machida, Takayasu; Yamada, Kenji; and Kanno, Fumio, to Citizen Watch Company Limited. Drive control system for stepping motor. 4,283,783, Cl. 368-76.000.
Nakajima, Kenji. Flange for a duct. 4,283,080, Cl. 285-405.000.
Nakajima, Shoji, to Matsushita Electric Industrial Co., Ltd. Piezoelectric speaker. 4,283,605, Cl. 179-110.00A.
Nakamura, Kazuaki: *See*—
Momose, Yutaka; and Nakamura, Kazuaki, 4,282,716, Cl. 62-6.000.
Nakamura, Kazuo: *See*—
Hanazono, Masami; Watanabe, Tomoyoshi; Nakai, Toshio; Kuzuya, Susumu; Asai, Akira; Iwase, Takayuki; Nakamura, Kazuo; and Onoda, Hiroshi, 4,283,150, Cl. 400-666.000.
Nakamura, Tadahiko: *See*—
Morio, Minoru; Nakamura, Tadahiko; Kambara, Masahiro; and Kubota, Yukio, 4,283,736, Cl. 358-4.000.
Nakano, Kenji; and Nakamura, Tadahiko, 4,283,671, Cl. 318-608.000.
Nakamura, Takayuki: *See*—
Nakagawa, Hiroaki; Hirowatari, Noriyuki; and Nakamura, Takayuki, 4,283,570, Cl. 568-768.000.
Nakano, Jiro: *See*—
Sugimoto, Hiroshi; and Nakano, Jiro, 4,282,957, Cl. 192-9.000.
Nakano, Kenji; and Nakamura, Tadahiko, to Sony Corporation. Automatic residual phase error compensation circuit for a digital servo control system. 4,283,671, Cl. 318-608.000.
Nakano, Takuo: *See*—
Matsubara, Akira; Sakai, Hideaki; Suganuma, Toshio; Fukazawa, Nobuyuki; and Nakano, Takuo, 4,283,398, Cl. 424-246.000.
Nakata, Kazuo: *See*—
Nakajima, Akira; Ichikawa, Akira; and Nakata, Kazuo, 4,283,601, Cl. 179-1.0SD.
Nakatsuka, Kiyoharu; and Abeta, Sadaharu, to Sumitomo Chemical Company, Limited. Dyestuff composition for dyeing or printing cellulose fiber materials. 4,283,195, Cl. 8-524.000.
Nakayama, Masaharu: *See*—
Matsushima, Masaru; Komai, Takeshi; and Nakayama, Masaharu, 4,283,512, Cl. 525-438.000.
Nakayama, Tetsuya: *See*—
Suganami, Takashi; Takeda, Tashiro; Nakayama, Tetsuya; Shimizu, Koh; and Manseki, Teruo, 4,282,933, Cl. 172-4.500.
Nalbandian, A. Eugene; and Sullivan, James P., to Tweezer-Lite, Inc. Illuminated screwdriver. 4,283,757, Cl. 362-120.000.
Nalco Chemical Company: *See*—
Phillips, Kenneth G.; and Bingham, Mary E., 4,283,507, Cl. 525-344.000.
Nambu, Hirohiko; Nakagawa, Hiroaki; and Isibasi, Masayasu, to Mitsui Petrochemical Industries Ltd. Method for recovering resorcinol. 4,283,567, Cl. 568-754.000.
Nanbu, Hirofumi: *See*—
Yamauchi, Takashi; and Nanbu, Hirofumi, 4,283,352, Cl. 568-311.000.
Napp Systems (USA) Inc.: *See*—
Okai, Sakuo; and Kimoto, Koichi, 4,283,481, Cl. 430-271.000.
Nardi, Anthony P., to Sperry Corporation. Resonant acoustic transducer system for a well drilling string. 4,283,780, Cl. 367-82.000.
Nartron Corporation: *See*—
Bull, David W., 4,283,611, Cl. 200-252.000.
Nash, John E., to Syntex (U.S.A.) Inc. Dental scaler having scaling tip with rounded edge work surfaces particularly suitable for circular or ellipsoidal patterns of vibration. 4,283,175, Cl. 433-119.000.
National Power Corporation: *See*—
Powell, Charles A., 4,282,903, Cl. 137-893.000.
National Semiconductor Corporation: *See*—
Green, Robert S., 4,283,642, Cl. 307-297.000.
National Starch and Chemical Corporation: *See*—
Rao, Krishna K., 4,283,525, Cl. 528-489.000.
Natmar, Inc.: *See*—
Clay, Bobby J., 4,282,808, Cl. 101-93.070.
Natori, Minoru: *See*—
Tamaru, Munetaka; and Natori, Minoru, 4,283,782, Cl. 368-72.000.
Natsuume, Tadao: *See*—
Yamato, Motoyuki; and Natsuume, Tadao, 4,283,343, Cl. 260-346.300.
NCR Corporation: *See*—
Curry, John L., 4,283,660, Cl. 315-169.200.
Passer, Barry E.; and Sculley, George A., 4,283,622, Cl. 235-462.000.

Neal, Carl R.: *See*—
Teague, Edward W.; Hance, Max H.; and Neal, Carl R., 4,283,194, Cl. 8-494.000.
Neary, Joseph F., to Troller Corporation. Diving plane for fishing. 4,282,672, Cl. 43-43.130.
Nebzydoski, John W.; and Patmore, Edwin L., to Texaco Inc. Amine salt of N-triazolyl-hydrocarbyl succinamic acid and lubricating oil composition containing same. 4,283,296, Cl. 252-49.900.
Neiman S.A.: *See*—
Lipschutz, Paul, 4,282,730, Cl. 70-184.000.
Nelson, Frank M.: *See*—
Daughton, John W.; Gillett, Kenneth; and Nelson, Frank M., 4,283,773, Cl. 364-900.000.
Nelson, James L.: *See*—
Lucero, Andres R.; Williams, David E.; and Nelson, James L., 4,283,709, Cl. 340-147.00R.
Nelson, Terence J., to Bell Telephone Laboratories, Incorporated. Ion-implanted magnetic bubble memory. 4,283,776, Cl. 365-36.000.
Nester, Dallas G.: *See*—
Dunlap, Albert R.; and Nester, Dallas G., 4,282,727, Cl. 66-172.00E.
Newberry, Richard D.; and Brayley, Elwin J., to Eltra Corporation. Breakerless magneto ignition system. 4,282,839, Cl. 123-335.000.
NGK Insulators, Ltd.: *See*—
Mochida, Shigeru; and Ogasawara, Takayuki, 4,283,210, Cl. 55-523.000.
Nichols, Lawrence J.: *See*—
MacMaster, George H.; and Nichols, Lawrence J., 4,283,685, Cl. 330-286.000.
Nickel, Friedhelm: *See*—
Koerner, Gotz; Nickel, Friedhelm; and Schmidt, Gunter, 4,283,191, Cl. 8-128.00A.
Nicko, Reinhard: *See*—
Engelsmann, Dieter; Lermann, Peter; Nicko, Reinhard; Schultes, Herbert; and Wagner, Karl, 4,283,132, Cl. 354-202.000.
Nifco Inc.: *See*—
Yamazaki, Haruo; Matsumoto, Masaharu; and Kimura, Shigeru, 4,283,155, Cl. 403-163.000.
Niggemann, Johannes: *See*—
Wagner, Kuno; Niggemann, Johannes; Findeisen, Kurt; and Scheinpflug, Hans, 4,283,219, Cl. 71-28.000.
Nihon Denshi Kabushiki Kaisha: *See*—
Nakagawa, Seiichi; and Ikeda, Takayoshi, 4,283,632, Cl. 250-503.000.
Nihon Nohyaku Co., Ltd.: *See*—
Kodaira, Tsumoru; Kobayashi, Yoshiro; and Kurono, Hitoshi, 4,283,344, Cl. 260-346.220.
Nihon Shinku Gijutsu Kabushiki Kaisha: *See*—
Hattori, Shuzo; and Morita, Shinzo, 4,283,482, Cl. 430-296.000.
Nikami, Akira, to Sony Corporation. Video signal reproducing apparatus with circuit avoiding skew distortion when operated at abnormal speed and/or direction. 4,283,737, Cl. 358-8.000.
Nilsen, Norman P. Back flow check and self-cleaning spring biased waterer valve. 4,282,831, Cl. 119-75.000.
Nippon Dia Clevite Co., Ltd.: *See*—
Morimoto, Toru; Ohsaki, Tsuyoshi; Ohkawa, Toshio; and Matsuzawa, Kenji, 4,283,465, Cl. 428-566.000.
Nippon Electric Co., Ltd.: *See*—
Aomura, Kunio, 4,283,733, Cl. 357-68.000.
Goto, Genichi; and Hanihara, Sadamasa, 4,283,656, Cl. 315-3.500.
Ito, Susmu; and Nagao, Morimasa, 4,283,679, Cl. 324-165.000.
Nippon Gakki Seizo Kabushiki Kaisha: *See*—
Nagamoto, Itsushi, 4,283,050, Cl. 273-73.00K.
Wachi, Masatada, 4,282,790, Cl. 84-1.210.
Yamaga, Eiichi; Iio, Junji; Takeda, Toshio; Nakada, Akira; and Imamura, Akio, 4,282,788, Cl. 84-1.030.
Nippon Kogaku K.K.: *See*—
Ishizaka, Sunao; and Fukuhara, Toru, 4,283,133, Cl. 354-270.000.
Nippon Oil Company, Ltd.: *See*—
Omika, Hiroyoshi; Hara, Hajime; Otsuki, Yutaka; Araki, Yoshihiko; and Aoyama, Kazuho, 4,283,313, Cl. 260-18.0EP.
Nippon Oil and Fats Co., Ltd.: *See*—
Matsushima, Masaru; Komai, Takeshi; and Nakayama, Masaharu, 4,283,512, Cl. 525-438.000.
Nippon Shokubai Kagaku Kogyo Co., Ltd.: *See*—
Odanaka, Hiroshi; Saotome, Minoru; and Kumazawa, Toshihiko, 4,283,580, Cl. 568-858.000.
Ohara, Takashi; Ono, Tetsuji; Yonehara, Kiyoshi; and Yamauchi, Shin, 4,283,308, Cl. 252-435.000.
Nippon Zeon Co. Ltd.: *See*—
Yamato, Motoyuki; and Natsuume, Tadao, 4,283,343, Cl. 260-346.300.
Nippondenso Co., Ltd.: *See*—
Totani, Shinzo; and Kato, Takaaki, 4,282,780, Cl. 74-866.000.
Yamada, Kenji; Takata, Akira; Ii, Akira; and Ohiwa, Katsuhiko, 4,282,840, Cl. 123-412.000.
Nishida, Shigeki, to Noritsu Koki Co., Ltd. Automatic film retriever. 4,283,021, Cl. 242-55.000.
Nishimori Kogyo Co., Ltd.: *See*—
Maeda, Teizo; and Murakawa, Masao, 4,282,996, Cl. 225-2.000.
Nishimura, Susumu: *See*—
Ohtani, Takeshi; Nishimura, Susumu; Magami, Kozo; and Osada, Katsuhisa, 4,283,704, Cl. 338-138.000.
Nissan Chemical Industries, Ltd.: *See*—
Yoshimura, Masahito; Hoshiyama, Satoshi; Takamatsu, Hideki; Kobayashi, Hiroshi; and Takigawa, Shinichiro, 4,283,586, Cl. 585-512.000.
Nissan Motor Company, Limited: *See*—
Antoku, Mitugu; and Saito, Fumio, 4,282,713, Cl. 60-600.000.
Gotoh, Miyuki, 4,283,748, Cl. 361-154.000.
Iwanaga, Kazuyoshi; Sugano, Kazuhiko; and Ohtsuka, Kunio, 4,282,781, Cl. 74-869.000.
Ohtsuka, Kunio, 4,282,773, Cl. 74-688.000.
Takagi, Yasuo; Onoda, Michio; Katsumata, Masaaki; and Yoneda, Kenji, 4,282,841, Cl. 123-425.000.
Tsuda, Hiroshi; and Matsuoka, Hideoki, 4,283,036, Cl. 248-429.000.
Nisshin Oil Mills, Ltd., The: *See*—
Ouchi, Hiroo; and Saito, Noriyasu, 4,283,346, Cl. 260-424.000.
Nissin Kogyo Kabushiki Kaisha: *See*—
Takeuchi, Hiroo, 4,282,799, Cl. 91-369.00A.
Nitto Electric Industrial Co., Ltd.: *See*—
Kakuhashi, Takeshi; and Fukunaga, Kazuo, 4,283,248, Cl. 156-637.000.
Musa, Yoshikazu; and Mune, Isao, 4,283,318, Cl. 260-28.50B.
Niwa, Shoji. Clamp type galvanometer. 4,283,677, Cl. 324-127.000.
Niwa, Yukichi: *See*—
Tsunekawa, Tokuichi; Masunaga, Makoto; Hosoe, Kazuya; Niwa, Yukichi; Owada, Mitsutoshi; and Asano, Noriyuki, 4,283,137, Cl. 356-4.000.
Nix, Donald F.: *See*—
Kulesza, Ralph J.; Meyer, Burton C.; and Nix, Donald F., 4,282,848, Cl. 124-16.000.
Nix, Robert J.: *See*—
Massion, Robert J.; Lems, Peter; and Nix, Robert J., 4,282,907, Cl. 140-93.400.
Nixdorff Krein Industries, Inc.: *See*—
Mead, Harold C., 4,282,694, Cl. 52-508.000.
NL Industries, Inc.: *See*—
Schaeper, Gary R.; and Olson, Richard A., 4,283,039, Cl. 251-1.00B.
Noble, Lynn W.: *See*—
Cormier, Alan D.; Webster, Milo E.; Czaban, John D.; Silverman, Neil D.; and Noble, Lynn W., 4,283,262, Cl. 204-195.00M.
Noda, Akinori: *See*—
Henmi, Ichiro; Noda, Akinori; and Ono, Takuro, 4,283,360, Cl. 264-63.000.
Nohara, Fujio, to Ikeda Mohando Co., Ltd. Process for preparation of o-(2,6-dichloroanilino)phenylacetic acid and novel intermediate for use in preparation of the same. 4,283,532, Cl. 544-165.000.
Nohira, Hidetaka; Ito, Sumio; and Oki, Hisashi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Internal combustion engine with exhaust gas accumulation chamber. 4,282,845, Cl. 123-568.000.
Nomori, Hiroyuki: *See*—
Kaneko, Tadashi; Shimura, Takeo; Matsumoto, Masanori; Moriguchi, Hiroyuki; and Nomori, Hiroyuki, 4,283,474, Cl. 430-69.000.
Norbeck, Dean K.: *See*—
Kountz, Kenneth J.; Erth, Richard A.; and Norbeck, Dean K., 4,282,718, Cl. 62-115.000.
Kountz, Kenneth J.; Erth, Richard A.; and Norbeck, Dean K., 4,282,719, Cl. 62-115.000.
Nordqvist, Erik G. P.: *See*—
af Ekenstam, Bo T.; and Nordqvist, Erik G. P., 4,282,986, Cl. 222-1.000.
Nordson Corporation: *See*—
Crum, Gerald W.; and Rooney, Brian M., 4,283,764, Cl. 364-513.000.
Noritsu Koki Co., Ltd.: *See*—
Nishida, Shigeki, 4,283,021, Cl. 242-55.000.
Norlin Industries, Inc.: *See*—
Walborn, Richard M., 4,282,787, Cl. 84-1.010.
Northern Natural Gas Company: *See*—
Mills, Walter C.; and Patterson, James W., 4,282,894, Cl. 137-15.000.
Novello, Peter P., to Vaughn Corporation. Electrode structure for electrocardiograph and related physiological measurements and the like. 4,282,878, Cl. 128-641.000.
Novotny, Miroslav, to Allied Chemical Corporation. Pre-pressuring methanol-cobalt with carbon monoxide in homologation of methanol. 4,283,582, Cl. 568-902.000.
Nuesslein, Alfred. Tube closure device. 4,282,982, Cl. 220-237.000.
Numata, Tatsuo, to Pioneer Electronic Corporation. Muting signal generation circuit for an FM receiver. 4,283,793, Cl. 455-213.000.
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Corke, Nicholas T.; and Debbaut, Christian A. M., 4,283,239, Cl. 156-85.000.
Obayashi, Nobuharu; Hashizume, Hikaru; Kameyama, Seiji; Ezawa, Sadaaki; Kondo, Tatsuhori; Takauji, Kiyomi; and Aoyama, Tohru, to Kabushiki Kaisha Kawai Gakki Seisakusho. Electronic musical instrument. 4,282,785, Cl. 84-1.010.
Obraztsov, Jury V.: *See*—
Anosov, Oleg V.; Mirzoev, Alexandr G.; and Obraztsov, Jury V., 4,283,595, Cl. 174-73.00R.
Obrezkov, Alexandr I.: *See*—
Tabakov, Vladimir P.; Kornev, Boris P.; Buchenkov, Leonid N.; Gorbunov, Andrei T.; Kaschavtsev, Vladilen E.; Pilatovsky, Viktor P.; Gurov, Evgeny I.; Obrezkov, Alexandr I.; Vakhitov, Gadel G.; Bulgakov, Rishad T.; Maximov, Vladimir P.; Maxutov, Rafkhat A.; Shnirelman, Alexandr I.; Dobroskok, Boris E.;

Asfandiyarov, Khalim A.; and Fatkullin, Airat K., deceased, 4,283,088, Cl. 299-2.000.
Odanaka, Hiroshi; Saotome, Minoru; and Kumazawa, Toshihiko, to Nippon Shokubai Kagaku Kogyo Co., Ltd. Process for the production of alkylene glycols. 4,283,580, Cl. 568-858.000.
O'Day, Gerald L. Sanitary urinal. 4,282,611, Cl. 4-144.100.
Oepen, Heinz: *See*—
Feller, Otto; Oepen, Heinz; Kuhl, Manfred; Skrobek, Alois; Bornefeld, Horst; Seiler, Hans G.; and Johann, Walter, 4,282,784, Cl. 82-19.000.
Oesch, Johann U.: *See*—
Becker, Gert; Oesch, Johann U.; Poeselt, Horst; Tomlinson, Alan D.; and Walz, Kurt, 4,283,299, Cl. 252-90.000.
Ogasawara, Takayuki: *See*—
Mochida, Shigeru; and Ogasawara, Takayuki, 4,283,210, Cl. 55-523.000.
Ogata, Ikuei: *See*—
Kawabata, Yasujiro; and Ogata, Ikuei, 4,283,563, Cl. 568-454.000.
Ogawa, Hiroshi: *See*—
Takigawa, Hiroyoshi; Miyamura, Nobuhiro; Ogawa, Hiroshi; and Ohkuni, Shinichiro, 4,282,914, Cl. 152-209.00D.
Ogawa, Yasuaki: *See*—
Ezaki, Norio; Miyadoh, Shinji; Ogawa, Yasuaki; Hisamatsu, Takashi; Fukuyashu, Harumi; and Yamada, Yujiro, 4,283,389, Cl. 424-116.000.
Ogilvie, John T.: *See*—
Thompson, David G.; and Ogilvie, John T., 4,282,645, Cl. 29-570.000.
Ohara, Takashi; Ono, Tetsuji; Yonehara, Kiyoshi; and Yamauchi, Shin, to Nippon Shokubai Kagaku Kogyo Co., Ltd. Auto exhaust gas catalyst, and process for production thereof. 4,283,308, Cl. 252-435.000.
Ohi Seisakusho Co., Ltd.: *See*—
Yamazaki, Haruo; Matsumoto, Masaharu; and Kimura, Shigeru, 4,283,155, Cl. 403-163.000.
Ohiwa, Katsuhiko: *See*—
Yamada, Kenji; Takata, Akira; Ii, Akira; and Ohiwa, Katsuhiko, 4,282,840, Cl. 123-412.000.
Ohkawa, Toshio: *See*—
Morimoto, Toru; Ohsaki, Tsuyoshi; Ohkawa, Toshio; and Matsuzawa, Kenji, 4,283,465, Cl. 428-566.000.
Ohkuni, Shinichiro: *See*—
Takigawa, Hiroyoshi; Miyamura, Nobuhiro; Ogawa, Hiroshi; and Ohkuni, Shinichiro, 4,282,914, Cl. 152-209.00D.
Ohmuro, Shigeru: *See*—
Hongu, Masayuki; Ohmuro, Shigeru; and Tokuhara, Masaharu, 4,283,792, Cl. 455-192.000.
Ohnuki, Mitsuo; and Yamada, Masashi, to Konishiroku Photo Industry Co., Ltd. Manual focus setting apparatus for photographic camera having automatic focus adjusting mechanism. 4,283,131, Cl. 354-195.000.
Ohsaki, Tsuyoshi: *See*—
Morimoto, Toru; Ohsaki, Tsuyoshi; Ohkawa, Toshio; and Matsuzawa, Kenji, 4,283,465, Cl. 428-566.000.
Ohtani, Takeshi; Nishimura, Susumu; Magami, Kozo; and Osada, Katsuhisa, to Alps Electric Co., Ltd. Variable resistor. 4,283,704, Cl. 338-138.000.
Ohtsuka, Kunio, to Nissan Motor Company, Limited. Change-speed transmission. 4,282,773, Cl. 74-688.000.
Ohtsuka, Kunio: *See*—
Iwanaga, Kazuyoshi; Sugano, Kazuhiko; and Ohtsuka, Kunio, 4,282,781, Cl. 74-869.000.
Ojembarrena, Luciano G.; and Robles, Francisco I. Arrangement for supporting a curtain holding rod. 4,283,035, Cl. 248-263.000.
Oka, Hiroshi: *See*—
Yoshida, Yoshinori; and Oka, Hiroshi, 4,283,579, Cl. 568-857.000.
Okada, Masataka, to Clarion Co., Ltd. Apparatus for discriminating television signal. 4,283,740, Cl. 358-124.000.
Okai, Sakuo; and Kimoto, Koichi, to Napp Systems (USA) Inc. Element having phosphine activated photosensitive compositions therein. 4,283,481, Cl. 430-271.000.
Okajima, Hideki: *See*—
Atsumi, Toshio; Takebayashi, Yoshiaki; and Okajima, Hideki, 4,283,422, Cl. 424-325.000.
Okamura, Kiyohito: *See*—
Yajima, Seishi; Okamura, Kiyohito; and Hasegawa, Yoshio, 4,283,376, Cl. 423-345.000.
Okamura, Shiro. Digital transmission system. 4,283,786, Cl. 371-2.000.
Oki Electric Industry Co., Ltd.: *See*—
Masuda, Yoshio; Fukasawa, Atsushi; Ashiwa, Jun; and Sato, Takuro, 4,283,697, Cl. 333-202.000.
Oki, Hisashi: *See*—
Nohira, Hidetaka; Ito, Sumio; and Oki, Hisashi, 4,282,845, Cl. 123-568.000.
Okumoto, Itsuo: *See*—
Fujii, Setsuro; Watanabe, Tsuyoshi; Shiota, Masashi; Okumoto, Itsuo; and Kayama, Naohiro, 4,283,418, Cl. 424-310.000.
O'Lenick, Anthony J., Jr.; and Mayhew, Raymond L., to Mona Industries. Process for the preparation of phosphobetaines. 4,283,542, Cl. 548-112.000.
Olin Corporation: *See*—
Wood, John C.; and Thompson, Charles W., 4,282,671, Cl. 42-75.00A.
Olson, Jerry A.: *See*—
Brown, James M.; Kaiser, Hermann; and Olson, Jerry A., 4,282,751, Cl. 73-202.000.
Olson, Richard A.: *See*—
Schaeper, Gary R.; and Olson, Richard A., 4,283,039, Cl. 251-1.00B.
Olympus Optical Company Limited: *See*—
Osanai, Akira, 4,283,095, Cl. 308-139.000.
Tojyo, Tsutomu, 4,283,123, Cl. 350-414.000.
Yonekubo, Ken, 4,283,110, Cl. 350-33.000.
Omana, Julio A. Air rifle with piston impelled by compressed gas. 4,282,852, Cl. 124-67.000.
Omika, Hiroyoshi; Hara, Hajime; Otsuki, Yutaka; Araki, Yoshihiko; and Aoyama, Kazuho, to Nippon Oil Company, Ltd. Cathode-precipitating electrodeposition coating composition. 4,283,313, Cl. 260-18.0EP.
Ono Pharmaceutical Co., Ltd.: *See*—
Fujii, Setsuro; Watanabe, Tsuyoshi; Shiota, Masashi; Okumoto, Itsuo; and Kayama, Naohiro, 4,283,418, Cl. 424-310.000.
Ono, Takuro: *See*—
Henmi, Ichiro; Noda, Akinori; and Ono, Takuro, 4,283,360, Cl. 264-63.000.
Ono, Tetsuji: *See*—
Ohara, Takashi; Ono, Tetsuji; Yonehara, Kiyoshi; and Yamauchi, Shin, 4,283,308, Cl. 252-435.000.
Onoda Cement Co., Ltd.: *See*—
Itoh, Tsutomu, 4,283,189, Cl. 493-109.000.
Onoda, Hiroshi: *See*—
Hanazono, Masami; Watanabe, Tomoyoshi; Nakai, Toshio; Kuzuya, Susumu; Asai, Akira; Iwase, Takayuki; Nakamura, Kazuo; and Onoda, Hiroshi, 4,283,150, Cl. 400-666.000.
Onoda, Michio: *See*—
Takagi, Yasuo; Onoda, Michio; Katsumata, Masaaki; and Yoneda, Kenji, 4,282,841, Cl. 123-425.000.
Orain, Michel A., to Glaenzer Spicer. Device for protecting in particular the articulation and bearing of a transmission shaft. 4,282,722, Cl. 64-32.00F.
Oreco III, Inc.: *See*—
Evans, Orde R.; Rhodes, William D.; and Trahan, Joseph O., 4,283,161, Cl. 405-216.000.
Oregon Graduate Center for Study and Research: *See*—
Elliott, Richard A.; Massey, Gail A.; and Shaw, John B., 4,283,122, Cl. 350-379.000.
Orlando, Franklin P., to FMC Corporation. Shaker units for harvesting machines. 4,282,706, Cl. 56-330.000.
Orser, David A.; Towlson, Howard E.; and True, Thomas T., to General Electric Company. Light valve projection system with off axis raster orientation. 4,283,120, Cl. 350-361.000.
Osada, Katsuhisa: *See*—
Ohtani, Takeshi; Nishimura, Susumu; Magami, Kozo; and Osada, Katsuhisa, 4,283,704, Cl. 338-138.000.
Osanai, Akira, to Olympus Optical Company Limited. Capstan shaft thrust pad device. 4,283,095, Cl. 308-139.000.
Osborn, Charles, to JSJ Corporation. Vibration isolation mount for gear shifter. 4,282,768, Cl. 74-473.00R.
Ose, Earl E., to Eli Lilly and Company. Method for treating colibacillosis in pigs with tylosin apramycin compositions. 4,283,388, Cl. 424-114.000.
Otsuki, Yutaka: *See*—
Omika, Hiroyoshi; Hara, Hajime; Otsuki, Yutaka; Araki, Yoshihiko; and Aoyama, Kazuho, 4,283,313, Cl. 260-18.0EP.
Otto Hansel GmbH: *See*—
Hogenkamp, Wilhelm; and Wostbrock, Gert, 4,282,964, Cl. 198-358.000.
Otto, Robert R.: *See*—
Snyder, R. David; Iwerks, Donald W.; Otto, Robert R.; Richardson, Lee R.; and Inglish, David S., 4,283,766, Cl. 364-525.000.
Ouchi, Hiroo; and Saito, Noriyasu, to Nisshin Oil Mills, Ltd., The. Treatment of an oil-containing clay. 4,283,346, Cl. 260-424.000.
Outboard Marine Corporation: *See*—
Cavil, David T., 4,283,668, Cl. 318-549.000.
Stevens, Myron T., 4,282,704, Cl. 56-320.100.
Ovadia, Joseph. Jewelry display tray. 4,282,975, Cl. 206-566.000.
Overbaugn, Lorne S.: *See*—
Bourque, Rene; and Overbaugn, Lorne S., 4,282,659, Cl. 36-121.000.
Owada, Mitsutoshi: *See*—
Tsunekawa, Tokuichi; Masunaga, Makoto; Hosoe, Kazuya; Niwa, Yukichi; Owada, Mitsutoshi; and Asano, Noriyuki, 4,283,137, Cl. 356-4.000.
Owen, Hartley, to Mobil Oil Corporation. Method and system for regenerating fluidizable catalyst particles. 4,283,273, Cl. 208-113.000.
Owens-Illinois, Inc.: *See*—
Pei, Yu K., 4,282,857, Cl. 126-422.000.
Sherman, James E., 4,283,215, Cl. 65-79.000.
Swartzbaugh, Peter T., 4,282,983, Cl. 220-335.000.
Oyama, Minoru: *See*—
Kondo, Shiro; and Oyama, Minoru, 4,283,613, Cl. 200-340.000.
Paap, Hans J.: *See*—
Pitts, Robert W., Jr.; Arnold, Dan M.; and Paap, Hans J., 4,282,760, Cl. 73-861.020.
Paccar Inc.: *See*—
Bartley, Francis A., 4,282,952, Cl. 188-18.00A.
Padley, Frederick B.: *See*—
Soeters, Cornelis J.; Paulussen, Cornelis N.; Padley, Frederick B.; and Tresser, David, 4,283,436, Cl. 426-607.000.
Padovani, Francois A.: *See*—
Trenkler, George; Delagi, Richard G.; and Padovani, Francois A., 4,283,714, Cl. 340-365.00L.

Papantoniou, Christos: *See*—
Jacquet, Bernard; Mondet, Jean; and Papantoniou, Christos, 4,283,384, Cl. 424-47.000.

Par-way Mfg. Co.: *See*—
Hanson, Harold W., 4,283,012, Cl. 239-118.000.

Park Mobile, Inc.: *See*—
Lichti, R. D.; and Reimel, Howard (said Howard Reimel assors. to), 4,282,953, Cl. 188-189.000.

Parker, Eugene R., Jr.; and Bryant, Melvin B. Piling anchoring. 4,283,162, Cl. 405-244.000.

Parker-Hannifin Corporation: *See*—
Clark, Charles R.; Hanson, Lowell R.; and Steele, Gerald G., 4,282,909, Cl. 141-98.000.

Parker, Herman; Walker, Leon; and Berry, Howard S. Air powered rocket sled game. 4,283,053, Cl. 273-86.00D.

Parker, Robert R., to Bell & Howell Company. Projection lamp control arrangement. 4,283,658, Cl. 315-117.000.

Parks, Howard L., to Bunker Ramo Corporation. Cooling system for multiwafer high density circuit. 4,283,754, Cl. 361-382.000.

Parks, John H.: *See*—
Davidson, Harold C.; and Parks, John H., 4,282,838, Cl. 123-198.0DB.

Paschen, Peter; Rao, Chatty; and Preuss, Helmut, to Klockner-Humboldt-Deutz AG. Apparatus for the production of molded bodies from filter cakes. 4,283,285, Cl. 210-326.000.

Pasquali, Giancarlo, to CIR-S.p.A. Divisione Sasib. Multi-color traffic signal. 4,283,716, Cl. 340-380.000.

Passer, Barry E.; and Sculley, George A., to NCR Corporation. Bar code reader. 4,283,622, Cl. 235-462.000.

Patella, Gianfranco; and Patella, Luciano. Disk game apparatus. 4,283,054, Cl. 273-126.00R.

Patella, Luciano: *See*—
Patella, Gianfranco; and Patella, Luciano, 4,283,054, Cl. 273-126.00R.

Patmore, Edwin L.: *See*—
Nebzydoski, John W.; and Patmore, Edwin L., 4,283,296, Cl. 252-49.900.

Patterson, James A., to Amco Standards International. Optical characterization of a suspension. 4,283,143, Cl. 356-336.000.

Patterson, James W.: *See*—
Mills, Walter C.; and Patterson, James W., 4,282,894, Cl. 137-15.000.

Paudice, Ciro; and De Lena, Oscar, to Societa' Italiana Vetro-SIV-S.p.A. Thermal sheet production process. 4,283,440, Cl. 427-108.000.

Pauker, Vlad, to U.S. Philips Corporation. Impedance-matching network realized in microstrip technique. 4,283,694, Cl. 333-34.000.

Paulussen, Cornelis N.: *See*—
Soeters, Cornelis J.; Paulussen, Cornelis N.; Padley, Frederick B.; and Tresser, David, 4,283,436, Cl. 426-607.000.

Pavljuchenko, Valery N.: *See*—
Ivanchev, Sergei S.; Syrov, Anatoly A.; Pavljuchenko, Valery N.; Lesnikova, Ninel N.; and Rozhkova, Diana A., 4,283,553, Cl. 560-176.000.

Pavlov, Alexander S.: *See*—
Kulekov, Stefan I.; and Pavlov, Alexander S., 4,283,628, Cl. 250-358.00P.

Pedersen, Jens S., to A/S Plovfabrikken Fraugde. Adjustable length coupling for towing and lifting a tractor drawn implement. 4,283,071, Cl. 280-415.00A.

Peekna, Andres, to W. R. Grace & Co. Maintenance of constant web clearance at contactless turning guide. 4,282,998, Cl. 226-97.000.

Peeples, William D., to Diamond Shamrock Plastics Corporation. Process for the suspension polymerization of polyvinyl chloride. 4,283,516, Cl. 526-202.000.

Pei, Yu K., to Owens-Illinois, Inc. Solar energy collector assembly. 4,282,857, Cl. 126-422.000.

Pellman, Arnold: *See*—
Dreyfus, Marc G.; and Pellman, Arnold, 4,283,147, Cl. 356-445.000.

Pemberton, Donald S., to Lucas Industries Limited. Electrical terminal assembly. 4,283,104, Cl. 339-97.00R.

Pembroke, Robert. Apparatus and method of storing and retrieving information. 4,283,621, Cl. 235-375.000.

Pera, Vittorio, to Autovox S.p.A. Actuating device for the advancement of the tape in a cassette-type tape recording/playback apparatus. 4,283,746, Cl. 360-96.400.

Perez, Sergio J. Police night stick. 4,283,051, Cl. 273-84.00R.

Perkin-Elmer Corporation, The: *See*—
de Mey, Charles F., II, 4,282,897, Cl. 137-515.700.
Krim, Michael K., 4,282,688, Cl. 52-1.000.

Perkin, Gregg S., to Smith International Inc. Underreamer with large cutter elements and axial fluid passage. 4,282,941, Cl. 175-267.000.

Perkins, Carl C., Jr., to Western Electric Co., Inc. Methods of making a gas tube surge protector. 4,283,747, Cl. 361-117.000.

Perricone, Alphonse C.; and Lucas, James M., to Milchem Incorporated. Continuous process for solution polymerization of acrylamide. 4,283,517, Cl. 526-229.000.

Perry, Charles. Fireplace screen system. 4,282,855, Cl. 126-121.000.

Personette, David: *See*—
Johnson, Albert O.; and Personette, David, 4,283,159, Cl. 405-60.000.

Peters, Heinrich; and Surma, Erich, to Hoechst Aktiengesellschaft. De-icing composition on the basis of ethylene glycol and/or propylene glycol, water and urea. 4,283,297, Cl. 252-70.000.

Peterson, Richard W., to Aluminum Company of America. Apparatus and method for solid particle bulk density measurements. 4,283,148, Cl. 366-142.000.

Peterson, William D.; and Lytle, John M., to Wm. D. Peterson & Associates. Internal combustion engine with gas synthesizer. 4,282,835, Cl. 123-1.00A.

Petree, Edwyn H., to Western Electric Company, Inc. Tool for assembling conductors to connector element. 4,282,644, Cl. 29-566.300.

Pettersen, Egil R.: *See*—
Lauba, Andu; and Pettersen, Egil R., 4,282,900, Cl. 137-625.300.

Pfaff Haushaltmaschinen GmbH: *See*—
Kemmel, Patrice J., 4,283,666, Cl. 318-349.000.

Pfisterer, Fritz: *See*—
Bilger, Gerhard; Hewig, Gert; Pfisterer, Fritz; and Schock, Hans-Werner, 4,283,590, Cl. 136-251.000.

Pfizer Inc.: *See*—
Althuis, Thomas H.; Harbert, Charles A.; Johnson, Michael R.; and Melvin, Lawrence S., Jr., 4,283,569, Cl. 568-764.000.
Belletire, John L.; and Sarges, Reinhard, 4,283,409, Cl. 424-273.00R.
Crawford, Thomas C., 4,283,340, Cl. 260-340.700.
Eggler, James F.; and Hess, Hans-Jurgen E., 4,283,417, Cl. 424-305.000.
Schnur, Rodney C., 4,283,539, Cl. 546-141.000.
Sciavolino, Frank C., 4,283,527, Cl. 536-9.000.

Philipp, Harald, to Tektronix, Inc. Waveform acquisition circuit. 4,283,713, Cl. 340-347.0SH.

Phillips, Charles W., to Grandeur Motorcar Corp. Method of converting motor car. 4,282,641, Cl. 29-416.000.

Phillips, Kenneth G.; and Bingham, Mary E., to Nalco Chemical Company. Hydrolysis of acrylamide polymers. 4,283,507, Cl. 525-344.000.

Phillips Petroleum Company: *See*—
DeFord, Donald D.; Clardy, Edwin K.; and Fuller, Edward N., 4,283,201, Cl. 23-230.00A.
McKay, Dwight L.; and Bertus, Brent J., 4,283,274, Cl. 208-120.000.
Wright, Roy F., 4,283,503, Cl. 525-89.000.

Phung, Nhu Hung: *See*—
Chauvin, Yves; Commereuc, Dominique; Gaillard, Jean; Leger, Gerard; and Phung, Nhu Hung, 4,283,305, Cl. 252-431.00C.

Phy, Charles L.: *See*—
Williams, Donald F.; and Phy, Charles L., 4,283,190, Cl. 493-131.000.

Piasecki, Raymond F.; and Kuo, Ted L. C., to Thomas & Betts Corporation. Multiconductor cable. 4,283,593, Cl. 174-36.000.

Picard, Harrison R.; Rotondo, Claude P.; Shaffer, Harold K.; and Brown, Bertrand H., to United Technologies Corporation. Intershaft bearing. 4,283,096, Cl. 308-207.00R.

Pickenhagen, Wilhelm, to Firmenich SA. Flavoring with α,β-unsaturated aldehydes. 4,283,433, Cl. 426-534.000.

Pickett, Patrick T., to United States of America, Energy. Leak test fitting. 4,282,743, Cl. 73-46.000.

Pierburg GmbH & Co. KG: *See*—
Henke, Ulrich; and Baumgartner, Hans, 4,282,746, Cl. 73-114.000.
Schauer, Walter; and Rosgen, Josef, 4,283,354, Cl. 261-41.00D.

Pigerol, Charles; Vernieres, Jean-Claude; Eymard, Pierre; Simiand, Jacques; Broll, Madeleine; and Lacolle, Jean-Yves, to Labaz. Pharmaceutically active cyclohexyl compounds and their preparation. 4,283,420, Cl. 424-317.000.

Pilatovsky, Viktor P.: *See*—
Tabakov, Vladimir P.; Kornev, Boris P.; Buchenkov, Leonid N.; Gorbunov, Andrei T.; Kaschavtsev, Vladilen E.; Pilatovsky, Viktor P.; Gurov, Evgeny I.; Obrezkov, Alexandr I.; Vakhitov, Gadel G.; Bulgakov, Rishad T.; Maximov, Vladimir P.; Maxutov, Rafkhat A.; Shnirelman, Alexandr I.; Dobroskok, Boris E.; Asfandiyarov, Khalim A.; and Fatkullin, Airat K., deceased, 4,283,088, Cl. 299-2.000.

Pillsbury Company, The: *See*—
Winters, William C.; Chang, Hsien-Hsin; Anderson, George R.; Easter, Ross A.; and Sholl, Jeffrey J., 4,283,427, Cl. 426-107.000.

Pines, Arthur N.; Johnson, Gordon C.; and Campbell, Fannie L., to Union Carbide Corporation. Organosilicone terpolymers. 4,283,519, Cl. 528-26.000.

Pinkham, Jesse R., to R. J. Reynolds Tobacco Company. Apparatus for stripping leaves from a stalk cured tobacco plant. 4,282,888, Cl. 130-30.00R.

Pinsky, Michael L.: *See*—
Frint, William R.; Copenhafer, William C.; and Pinsky, Michael L., 4,283,372, Cl. 423-206.00T.

Pioneer Electronic Corp.: *See*—
Kominami, Yasuo; Yamamura, Masahiro; Mizumoto, Katsuji; and Hanada, Toshihide, 4,283,674, Cl. 323-313.000.
Mizumoto, Katsuzi, 4,283,665, Cl. 318-317.000.
Numata, Tatsuo, 4,283,793, Cl. 455-213.000.

Pitney Bowes Inc.: *See*—
Eckert, Alton B.; and Duwel, Edward C., 4,283,721, Cl. 340-680.000.

Pitts, Robert W., Jr.; Arnold, Dan M.; and Paap, Hans J., to Texaco Inc. Multiphase fluid flow meter (D76,244). 4,282,760, Cl. 73-861.020.

Pittsburgh-Des Moines Steel Company: *See*—
Harper, George C., Jr., 4,283,156, Cl. 403-218.000.

Pizer, Robert S. Method and apparatus for inducing a pre-hypnotic state. 4,282,864, Cl. 128-1.00C.

Plakas, Chris J. Method for detection of low level bacterial concentration by luminescence. 4,283,490, Cl. 435-8.000.

Platonova, Ada T.: *See*—
Voronkov, Mikhail G.; Platonova, Ada T.; Simbirtsev, Nikolai L.; Dyakov, Valery M.; Dyban, Andrei P.; and Kuznetsov, Igor G., 4,283,419, Cl. 424-316.000.

Platts, Michael J.: *See—*
Comyns-Carr, Cecil A.; and Platts, Michael J., 4,282,712, Cl. 60-500.000.
Plessey Handel und Investments AG: *See—*
Skingley, John A., 4,283,641, Cl. 307-297.000.
Poeselt, Horst: *See—*
Becker, Gert; Oesch, Johann U.; Poeselt, Horst; Tomlinson, Alan D.; and Walz, Kurt, 4,283,299, Cl. 252-90.000.
Poetzlberger, Hans W.: *See—*
Muenz, Wolf-Dieter; and Poetzlberger, Hans W., 4,283,485, Cl. 430-314.000.
Pogell, Burton M.; and McCann, Pamela A., to St. Louis, University. Pamamycin. 4,283,391, Cl. 424-122.000.
Pogue, William F. Apparatus for exercising a limb of a patient. 4,282,865, Cl. 128-25.00R.
Polaroid Corporation: *See—*
Choinski, Edward J., 4,283,443, Cl. 427-295.000.
Cincotta, Louis; and Foley, James W., 4,283,537, Cl. 546-94.000.
Foley, James W., 4,283,538, Cl. 546-94.000.
Gold, Nicholas, 4,283,362, Cl. 264-160.000.
Polenz, Joachim; and Wagner, Hans, to Krupp-Koppers GmbH. Method and apparatus for processing filling gas from a coke oven battery. 4,283,253, Cl. 201-30.000.
Pollution Controls Industries, Inc.: *See—*
Herd, William H., Jr.; Curtis, Stanley F.; Mullican, Vernon T.; and Jones, Robert W., 4,283,355, Cl. 261-44.00F.
Polytop Corporation: *See—*
Hazard, Robert E., 4,282,991, Cl. 222-531.000.
Pommier, Jean, to Compagnie Generale des Etablissements Michelin. Radial carcass tire employing carcass expansion limiting block. 4,282,917, Cl. 152-352.00R.
Ponomarev, Viktor I.: *See—*
Shalaev, Vitaly I.; Protasov, Alexandr K.; Vasiliev, Vladimir I.; and Ponomarev, Viktor I., 4,283,081, Cl. 292-113.000.
Porlier, Joseph G. A., to Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence. Breathing mixture controller. 4,282,870, Cl. 128-203.140.
Porritts & Spencer Inc.: *See—*
Buchanan, Robert D., 4,283,454, Cl. 428-233.000.
Porten, Ronald M.: *See—*
Meyst, Richard P.; and Porten, Ronald M., 4,283,289, Cl. 210-448.000.
Portz, Charles A.: *See—*
Anthony, Charles; and Portz, Charles A., 4,282,621, Cl. 14-71.100.
Potthast, Richard H. Precast concrete building construction. 4,282,692, Cl. 52-236.300.
Powell, Charles A., to National Power Corporation. Steam cleaning machine. 4,282,903, Cl. 137-893.000.
PPG Industries, Inc.: *See—*
Birkmeyer, William J., 4,283,428, Cl. 426-131.000.
Temple, Chester S., 4,283,322, Cl. 260-29.6WB.
Prats, Michael; and Williamson, Alexander S., to Shell Oil Company. Process for measuring the formation water pressure within an oil layer in a dipping reservoir. 4,282,750, Cl. 73-155.000.
Prescott, David B., to Mechanex Corporation, The. Self aligning installation resistant lubricant seal. 4,283,063, Cl. 277-37.000.
Prestele, Karl: *See—*
Franetzki, Manfred; Gagneur, Klaus; and Prestele, Karl, 4,282,872, Cl. 128-213.00R.
Preuss, Helmut: *See—*
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Price, Raymond M.: *See—*
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Priess, Konrad: *See—*
Thomas, Friedrich W.; and Priess, Konrad, 4,283,260, Cl. 204-192.00R.
Procter & Gamble Company, The: *See—*
Diehl, Francis L., 4,283,301, Cl. 252-102.000.
Kurtz, James L., 4,283,300, Cl. 252-95.000.
Product Planning & Development, Inc.: *See—*
Jolkovski, Robert M., 4,282,668, Cl. 40-155.000.
Produits Chimiques Ugine Kuhlmann: *See—*
Delavarenne, Serge Y.; Dubreux, Bernard; and Tellier, Pierre, 4,283,345, Cl. 260-369.000.
Jequier, William; Ghenassia, Elie; Fine, Francois; and Krempf, Gerard, 4,283,577, Cl. 568-841.000.
Protasov, Alexandr K.: *See—*
Shalaev, Vitaly I.; Protasov, Alexandr K.; Vasiliev, Vladimir I.; and Ponomarev, Viktor I., 4,283,081, Cl. 292-113.000.
Provasnik, Robert, to Siemens Corporation. Temperature sensor for measuring the temperature of an engine. 4,282,754, Cl. 73-346.000.
Prussin, Samuel: *See—*
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Witek, Stanislaw; Grobelny, Damian; Ptaszkowska, Janina; Bielecki, Andrzej; Bakuniak, Edmund; Fulde, Stefan; and Gorska-Poczopko, Jadwiga, 4,283,399, Cl. 424-248.400.
Pujado, Peter R., to UOP Inc. Process for the recovery of phenol from a reaction mixture resulting from the acid cleavage of cumene hydroperoxide. 4,283,568, Cl. 568-754.000.
Putral, Alexander; and Schwochau, Klaus, to Kernforschungsanlage Julich, Gesellschaft mit beschrankter Haftung. Method of quantitatively separating uranium from specimens of natural water by sorption on silica. 4,283,370, Cl. 423-6.000.
Putz, Peter: *See—*
Spielau, Paul; Putz, Peter; Weiss, Richard; and Schraube, Hansfritz, deceased, 4,282,697, Cl. 52-746.000.
Pye (Electronic Products) Limited: *See—*
Stockdale, Trevor J.; and Moss, Anthony R. L., 4,283,141, Cl. 356-246.000.
Quadri, Farooq M.: *See—*
Schwartz, Sidney J.; Quadri, Farooq M.; and Hsin, Chung-Herng, 4,283,774, Cl. 365-8.000.
Quaker Oats Company, The: *See—*
Manoski, Paula M.; and Bone, David P., 4,283,424, Cl. 426-94.000.
Quality Craft, Inc.: *See—*
Bennick, Edward T., Jr., 4,283,129, Cl. 354-81.000.
Quandel, Siegfried, to Schafer Werke GmbH. Plastic-enclosed metal barrel. 4,282,974, Cl. 206-509.000.
R. J. Reynolds Tobacco Company: *See—*
Lee, Chin K., 4,283,496, Cl. 435-253.000.
Pinkham, Jesse R., 4,282,888, Cl. 130-30.00R.
Rado, Theodore A., to Kerr-McGee Corporation. Process for the production of aluminum chloride and related products. 4,283,371, Cl. 423-126.000.
Raffai, Jack I.; and Bernacki, Stephen E., to Massachusetts Institute of Technology. Dielectric isolation using shallow oxide and polycrystalline silicon utilizing selective oxidation. 4,283,235, Cl. 148-175.000.
Ragan, James T. Golf club. 4,283,057, Cl. 273-186.00A.
Ramey, Donald G.: *See—*
Molnar, Albert J.; Wolff, Fred H.; and Ramey, Donald G., 4,282,756, Cl. 73-650.000.
Ramsey, David E., Jr.: *See—*
Horne, Ottis J., Jr.; and Ramsey, David E., Jr., 4,283,375, Cl. 423-345.000.
Ramshaw, Colin; and Mallinson, Roger H., to Imperial Chemical Industries Limited. Mass transfer process. 4,283,255, Cl. 203-49.000.
Randall, James E., to Kap & Kor, Inc. Disposable-type cap with pull-out crown. 4,282,607, Cl. 2-197.000.
Rao, Chatty: *See—*
Paschen, Peter; Rao, Chatty; and Preuss, Helmut, 4,283,285, Cl. 210-326.000.
Rao, Krishna K., to National Starch and Chemical Corporation. Continuous process for increasing discrete particle size of solution carboxyl polymers. 4,283,525, Cl. 528-489.000.
Ray, Frank F. Anti-viral treatment. 4,283,421, Cl. 424-317.000.
Raychem Pontoise S.A.: *See—*
Vidakovits, Lajos J.; and Watine, Didier J. M., 4,283,596, Cl. 174-84.00R.
Raytheon Company: *See—*
MacMaster, George H.; and Nichols, Lawrence J., 4,283,685, Cl. 330-286.000.
Rountree, Hoyt S., 4,283,767, Cl. 364-574.000.
RCA Corporation: *See—*
Gibson, Walter G., 4,283,741, Cl. 358-197.000.
Rutishauser, Ernst A. O., 4,283,738, Cl. 358-11.000.
Sterzer, Fred, 4,282,887, Cl. 128-804.000.
van Raalte, John A., 4,283,654, Cl. 313-422.000.
Rea, James H.: *See—*
Chow, Wai Y.; Hurley, Daniel J.; Rea, James H.; and Thackaberry, S. Paul, 4,283,551, Cl. 560-86.000.
Reaney, Lawrence A. Battery mover. 4,283,164, Cl. 414-396.000.
Reed, Russell, Jr.; and Price, Raymond M., to Thiokol Corporation. Method of making a gun propellant composition. 4,283,237, Cl. 149-19.910.
Reed, Terry J.: *See—*
Yannone, Robert A.; and Reed, Terry J., 4,283,634, Cl. 290-40.00R.
Regler, Dieter; Meissner, Bruno; and Moritz, Alfred, to Wacker-Chemitronic Gesellschaft fur Elektronik-Grundstoffe mbH. Process for cementing semiconductor discs onto a carrier plate. 4,283,242, Cl. 156-154.000.
Reiff, Karl; Wagner, Wolfgang; and Masur, Klaus, to C. Stiefelmayer KG. Measuring and/or tracing device. 4,282,654, Cl. 33-1.00M.
Reimel, Howard: *See—*
Lichti, R. D.; and Reimel, Howard, 4,282,953, Cl. 188-189.000.
Reiner, Josef, to Herbert Schwind GmbH & Co. KG. Method and apparatus for eye refraction determination. 4,283,126, Cl. 351-30.000.
Reinert, Gerhard: *See—*
Schurings, Willy; Anceschi, Italo; and Reinert, Gerhard, 4,283,197, Cl. 8-638.000.
Reinhall, Rolf B. Method and apparatus for controlling the effect of the centrifugal force on the stock in pulp defibrating apparatus. 4,283,016, Cl. 241-21.000.
Reinhall, Rolf B. Method and apparatus for producing fiber pulp from fibrous lignocellulose containing material. 4,283,252, Cl. 162-23.000.
Reinhard, Fred J.: *See—*
Bankes, Kristen E.; Johnson, Anderson F., Jr.; Large, Donald M.; and Reinhard, Fred J., 4,282,908, Cl. 140-147.000.
Rems-Werk Christian Foll und Sohne GmbH & Co.: *See—*
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Renner, Alfred: *See—*
Moser, Roland; and Renner, Alfred, 4,283,520, Cl. 528-93.000.
Renner, Hermann: *See—*
Sacco, Bruno; and Renner, Hermann, 4,283,085, Cl. 296-84.00R.
Research Corporation: *See—*
Stammer, Charles H., 4,283,328, Cl. 260-112.50R.
West, Charles R.; and Hong, Chung I., 4,283,394, Cl. 424-182.000.

Research Development Systems, Inc.: *See*—
Muchnick, Samuel N., 4,282,793, Cl. 84-414.000.
Research Institute for The Foundation: Special Inorganic Materials, The: *See*—
Yajima, Seishi; Okamura, Kiyohito; and Hasegawa, Yoshio, 4,283,376, Cl. 423-345.000.
Rethmeier, Gerhard, to Control Commerce AG. Paper transporting device for cash registers, data processing machines or the like. 4,283,149, Cl. 400-617.000.
Revelations Antoine Ltee: *See*—
Duceppe, Antoine, 4,282,891, Cl. 132-73.500.
Rexnord Inc.: *See*—
Harris, Bernard, 4,282,764, Cl. 74-89.150.
Reynolds, Gordon S.: *See*—
Todd, Robert J.; Smith, Gregg H.; and Reynolds, Gordon S., 4,282,881, Cl. 128-674.000.
Reynolds, Howard R. Weight compensator for adjustable broiler oven. 4,282,853, Cl. 126-19.00R.
Rhodes, William D.: *See*—
Evans, Orde R.; Rhodes, William D.; and Trahan, Joseph O., 4,283,161, Cl. 405-216.000.
Rica, Albert F.: *See*—
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Ricardo Consulting Engineers Limited: *See*—
Howard, Peter; and Weetman, David, 4,283,256, Cl. 204-1.00T.
Richard, Alyre J. Shredding accessory for rotary lawn mower. 4,283,018, Cl. 241-101.100.
Richard Wolf GmbH: *See*—
Boebel, Manfred, 4,282,884, Cl. 128-751.000.
Fraissl, Klaus, 4,283,115, Cl. 350-171.000.
Richards, Edward G., to Baltimore Aircoil Co., Inc. Machine guarding apparatus. 4,283,612, Cl. 200-334.000.
Richards, Hugh W.: *See*—
Farnsworth, Gary V.; Gandy, Gerald C.; and Richards, Hugh W., 4,283,476, Cl. 430-140.000.
Richardson, Lee R.: *See*—
Snyder, R. David; Iwerks, Donald W.; Otto, Robert R.; Richardson, Lee R.; and Inglish, David S., 4,283,766, Cl. 364-525.000.
Richardson-Merrell Inc.: *See*—
Carr, Albert A.; and Farr, Robert A., 4,283,404, Cl. 424-267.000.
Dhabhar, Dadi J.; and Shah, Nutan B., 4,283,385, Cl. 424-52.000.
Richardson, Paul N., to Du Pont de Nemours, E. I., and Company. Polyamide resins. 4,283,502, Cl. 525-66.000.
Richardson, Phillip N., to Texas Instruments Incorporated. Multiple beam antenna feed. 4,283,729, Cl. 343-854.000.
Richier, Paul. Electric socket-outlet. 4,283,102, Cl. 339-42.000.
Richman, Paul, to Standard Microsystems Corporation. Method of fabricating high density refractory metal gate MOS integrated circuits utilizing the gate as a selective diffusion and oxidation mask. 4,282,647, Cl. 29-571.000.
Richter Gedeon Vegyeszeti Gyar RT: *See*—
Szantay, Csaba; Szabo, Lajos; Kalaus, Gyorgy; Dancsi, Lajos; Keve, Tibor; Karpati, Egon; and Szporny, Laszlo, 4,283,401, Cl. 424-256.000.
Richter, John W., to Du Pont de Nemours, E. I., and Company. N-type betaines of 2-hydroxy-1,1,2,3,3-pentahydroperfluoroalkylamines. 4,283,533, Cl. 544-171.000.
Ricoh Co., Ltd.: *See*—
Kuzuwata, Masayuki; Machida, Hazime; Tamura, Hiroshi; and Saito, Tadashi, 4,282,811, Cl. 101-451.000.
Sifford, Bruce M.; and Magill, D. Thomas, 4,283,682, Cl. 329-50.000.
Ridder, Hans-Werner: *See*—
Habermehl, Adolf; and Ridder, Hans-Werner, 4,283,629, Cl. 250-445.00T.
Rieger, Franz: *See*—
Maurer, Helmut; Muller, Klaus; Rieger, Franz; Linder, Ernst; Dietz, Hermann; Friese, Karl-Hermann; and Ziegler, Bodo, 4,283,261, Cl. 204-195.00S.
Rieger, Michael L., to Tektronix, Inc. Graphics matrix multiplier. 4,283,765, Cl. 364-521.000.
Rieter Machine Works, Ltd.: *See*—
Gujer, Peter, 4,283,019, Cl. 242-18.00A.
Rieumont, Jose. Illuminated picture frame. 4,282,669, Cl. 40-453.000.
Riggs, Dean D. Body traction device. 4,282,868, Cl. 128-75.000.
Riley, Jesse L.: *See*—
Howell, Carl J., Jr.; Trott, David W.; and Riley, Jesse L., 4,282,890, Cl. 131-332.000.
Ring, H. Kenneth, Jr., to Trane Company, The. Pressurized signal control apparatus. 4,283,008, Cl. 236-49.000.
Ringfeder G.m.b.H.: *See*—
Friedrichs, Josef, 4,282,979, Cl. 213-29.000.
Risdon, David G. Weep hole device. 4,282,691, Cl. 52-101.000.
Rite-Hite Corporation: *See*—
Anthony, Charles; and Portz, Charles A., 4,282,621, Cl. 14-71.100.
Roach, Sally A.; and Hansen, Rob R. Ear ornament. 4,282,721, Cl. 63-14.00R.
Roark, Charles F. Water heating system using solar energy. 4,282,861, Cl. 126-435.000.
Robbins Company, The: *See*—
Fikse, Tyman H., 4,283,090, Cl. 299-33.000.
Robert Bosch GmbH: *See*—
Frank, Dieter; and Hennig, Kurt, 4,283,711, Cl. 340-166.00R.
Haecker, Wolf-Dieter; and Friese, Karl-Hermann, 4,283,441, Cl. 427-126.200.
Holzinger, Otto, 4,282,747, Cl. 73-116.000.
Maurer, Helmut; Muller, Klaus; Rieger, Franz; Linder, Ernst; Dietz, Hermann; Friese, Karl-Hermann; and Ziegler, Bodo, 4,283,261, Cl. 204-195.00S.
Robinson, Ralph L., Jr.: *See*—
Edelman, Brian S.; and Robinson, Ralph L., Jr., 4,283,761, Cl. 364-200.000.
Robles, Francisco I.: *See*—
Ojembarrena, Luciano G.; and Robles, Francisco I., 4,283,035, Cl. 248-263.000.
Rockwell International Corporation: *See*—
Eshghy, Siavash, 4,282,640, Cl. 29-240.000.
Saenz, Eliseo, 4,283,693, Cl. 333-18.000.
Rodebaugh, Richard M.: *See*—
Booth, David L.; and Rodebaugh, Richard M., 4,283,543, Cl. 548-138.000.
Rodgers, Robert E., Jr. Method of making composite racquet construction. 4,282,642, Cl. 29-469.500.
Roesler, Helmut, to Siemens Aktiengesellschaft. Device for producing two clock pulse trains from a periodic signal of any waveform. 4,283,639, Cl. 307-269.000.
Roger, Pierre: *See*—
Malen, Charles; Roger, Pierre; and Laubie, Michel, 4,283,407, Cl. 424-270.000.
Rogers, Norman H.: *See*—
Luk, Kong; Clayton, John P.; and Rogers, Norman H., 4,283,411, Cl. 424-283.000.
Luk, Kong; Clayton, John P.; and Rogers, Norman H., 4,283,412, Cl. 424-283.000.
Rogler, Wolfgang: *See*—
Kleeberg, Wolfgang; Rogler, Wolfgang; Gentzkow, Wolfgang V.; and Rubner, Roland, 4,283,505, Cl. 525-281.000.
Rohm and Haas Company: *See*—
Howell, Thomas J., 4,283,499, Cl. 521-38.000.
Rohner, Friedbert. Belt drive for a winding machine and a pulley for generating a periodically changing drive speed. 4,283,180, Cl. 474-8.000.
Romankiw, Lubomyr T.: *See*—
Melcher, Robert L.; Romankiw, Lubomyr T.; and von Gutfeld, Robert J., 4,283,259, Cl. 204-129.300.
Rooney, Brian M.: *See*—
Crum, Gerald W.; and Rooney, Brian M., 4,283,764, Cl. 364-513.000.
Rooney, Craig E., to Havens Steel Company. Truss structure. 4,282,619, Cl. 14-6.000.
Roques, Rodney A.; and Wakefield, Gene F., to Texas Instruments Incorporated. Liquid phase epitaxial process for magnetic garnet. 4,283,247, Cl. 156-601.000.
Rosaen, Nils O. Fluid flow meter. 4,282,761, Cl. 73-861.580.
Rosback, Donald H., deceased; and by Gillespie, Janice M., executrix, to UOP Inc. Adsorptive separation of aromatic isomers. 4,283,587, Cl. 585-828.000.
Roscoe, Charles S., to Eaton Corporation. Fan drive with torque transmitting device. 4,282,961, Cl. 192-58.00B.
Rosenberger, Edwin C.: *See*—
Brown, Carl E.; and Rosenberger, Edwin C., 4,283,066, Cl. 280-5.00D.
Rosenbrook, William, Jr., to Abbott Laboratories. 3-O-Demethyl derivatives of Sannamycin C and antibiotic AX-127B-1. 4,283,529, Cl. 536-17.00R.
Rosendall, Henry J.; and Shaffer, Arlan J., to Bissell, Inc. Floor sweeper with integral housing. 4,282,622, Cl. 15-41.00R.
Rosenfeld, Jerold C.: *See*—
Salee, Gideon; and Rosenfeld, Jerold C., 4,283,523, Cl. 528-176.000.
Rosenthal, Joel W.; and Kuehler, Christopher W., to Chevron Research Company. Two-stage coal liquefaction process with interstage guard bed. 4,283,268, Cl. 208-8.0LE.
Rosenwinkel, Donald A.; and Disko, Harry, to Marvin Glass & Associates. Novelty eyeglasses. 4,283,127, Cl. 351-158.000.
Rosgen, Josef: *See*—
Schauer, Walter; and Rosgen, Josef, 4,283,354, Cl. 261-41.00D.
Ross, Victor H.; and Ross, Victor H., Jr. Flexible joint protector. 4,283,078, Cl. 285-45.000.
Ross, Victor H., Jr.: *See*—
Ross, Victor H.; and Ross, Victor H., Jr., 4,283,078, Cl. 285-45.000.
Rossow, Harold E.: *See*—
Lane, George A.; and Rossow, Harold E., 4,283,298, Cl. 252-70.000.
Roth, Robert A. Medical irrigation device. 4,282,873, Cl. 128-276.000.
Rotondo, Claude P.: *See*—
Picard, Harrison R.; Rotondo, Claude P.; Shaffer, Harold K.; and Brown, Bertrand H., 4,283,096, Cl. 308-207.00R.
Rottmaier, Ludwig; and Merten, Rudolf, to Bayer Aktiengesellschaft. 1,2,4-Triglycidyl triazolidines-3,5-diones and a process for the preparation thereof. 4,283,546, Cl. 548-264.000.
Rountree, Hoyt S., to Raytheon Company. Multiple correlator reference processor. 4,283,767, Cl. 364-574.000.
Roussel, Philippe, to Lasag S.A. Optical detector. 4,283,146, Cl. 356-445.000.
Roussel Uclaf: *See*—
Heymes, Rene; and Lutz, Andre, 4,283,396, Cl. 424-246.000.
Rowe International, Inc.: *See*—
Lee, Larry F., 4,283,708, Cl. 340-146.30Z.
Royer, George R. Portable door covering for indoor heat savings. 4,282,689, Cl. 52-79.600.

Rozhkova, Diana A.: *See*—
Ivanchev, Sergei S.; Syrov, Anatoly A.; Pavljuchenko, Valery N.; Lesnikova, Ninel N.; and Rozhkova, Diana A., 4,283,553, Cl. 560-176.000.

Rubner, Roland: *See*—
Kleeberg, Wolfgang; Rogler, Wolfgang; Gentzkow, Wolfgang V.; and Rubner, Roland, 4,283,505, Cl. 525-281.000.

Rudin & Roth, Inc.: *See*—
Tapp, Robert H.; and Wall, Clarence W., 4,282,728, Cl. 66-182.000.

Rudolph, Peter K. C. Actuating apparatus for a flap system having an upper surface blowing powered lift system. 4,283,029, Cl. 244-215.000.

Ruhrchemie AG: *See*—
Bernhagen, Wolfgang; Bach, Hanswilhelm; Brundin, Eike; Gick, Wilhelm; Springer, Helmut; and Hack, Adolf, 4,283,564, Cl. 568-461.000.

Rundle, Joseph C.: *See*—
Harney, Donald W. G.; Lehman, Peter G.; and Rundle, Joseph C., 4,283,414, Cl. 424-304.000.

Russ, Dwayne A. Bow and arrow holder. 4,282,849, Cl. 124-23.00R.

Russell, John D. Strain measuring system. 4,282,749, Cl. 73-862.580.

Rutishauser, Ernst A. O., to RCA Corporation. NTSC to PAL transcoder. 4,283,738, Cl. 358-11.000.

Ryckman, William D., Jr., to General Electric Company. Overshoot compensated thermostat. 4,283,701, Cl. 337-341.000.

Ryffel, Henry; and Black, Thomas J., Jr., to Compudrive Corporation. Pancake planetary drive. 4,282,777, Cl. 74-804.000.

S.S.O.S. Sub Sea Oil Services S.p.A.: *See*—
Santi, Giunio G., 4,282,823, Cl. 114-341.000.

Sacco, Bruno; and Renner, Hermann, to Daimler-Benz Aktiengesellschaft. Pivotal hood arrangement, especially in motor vehicles. 4,283,085, Cl. 296-84.00R.

Saenz, Eliseo, to Rockwell International Corporation. Amplitude tilt compensating apparatus. 4,283,693, Cl. 333-18.000.

Safdy, Max E.: *See*—
Schut, Robert N.; Safdy, Max E.; and Hong, Enrique, 4,283,336, Cl. 260-326.14R.
Schut, Robert N.; Safdy, Max E.; and Hong, Enrique, 4,283,410, Cl. 424-274.000.

Saint-Dizier, Gilbert; Le Fur, Jean; and Louboutin, Robert, to Degremont. Filter having vertical filter elements. 4,283,282, Cl. 210-236.000.

Saint-Gobain Industries: *See*—
Boudenant, Pierre; Scholl, Heinz; and Zortea, Michel, 4,283,363, Cl. 264-171.000.

St. John, Richard C., to Aspro, Inc. Pivotal mounting assembly. 4,282,962, Cl. 192-105.0CD.

St. Louis, University: *See*—
Pogell, Burton M.; and McCann, Pamela A., 4,283,391, Cl. 424-122.000.

Saito, Fumio: *See*—
Antoku, Mitugu; and Saito, Fumio, 4,282,713, Cl. 60-600.000.

Saito, Noriyasu: *See*—
Ouchi, Hiroo; and Saito, Noriyasu, 4,283,346, Cl. 260-424.000.

Saito, Tadashi: *See*—
Kuzuwata, Masayuki; Machida, Hazime; Tamura, Hiroshi; and Saito, Tadashi, 4,282,811, Cl. 101-451.000.

Saito, Toshio: *See*—
Matsunami, Muneharu; Saito, Toshio; Yoshida, Akio; and Inokuchi, Nobuyuki, 4,283,076, Cl. 280-806.000.

Sakai, Heiichi: *See*—
Imanaka, Hiroshi; Hosoda, Junzi; Jomon, Kazuyoshi; Sakai, Heiichi; Ueda, Ikuo; and Morino, Daizou, 4,283,492, Cl. 435-47.000.

Sakai, Hideaki: *See*—
Matsubara, Akira; Sakai, Hideaki; Suganuma, Toshio; Fukazawa, Nobuyuki; and Nakano, Takuo, 4,283,398, Cl. 424-246.000.

Salee, Gideon; and Rosenfeld, Jerold C., to Hooker Chemicals & Plastics Corp. Fluoro-alkyl ester-terminated linear aromatic polyester of enhanced hydrolytic stability. 4,283,523, Cl. 528-176.000.

Salisbury, Winfield W.; and Stiles, Walter J., to Magnafrac. Apparatus for perforating oil and gas wells. 4,282,940, Cl. 175-11.000.

San-O Industrial Co., Ltd.: *See*—
Akiyama, Fumitake, 4,283,700, Cl. 337-166.000.

Sandrock, Don G., to Fiat-Allis Construction Machinery, Inc. Transmission shifter neutral lock. 4,282,769, Cl. 74-475.000.

Sankyo Electric Company, Limited: *See*—
Hiraga, Masaharu, 4,283,166, Cl. 417-269.000.

Sankyo Manufacturing Company, Ltd.: *See*—
Kato, Heizaburo, 4,282,779, Cl. 74-822.000.

Santi, Giunio G., to S.S.O.S. Sub Sea Oil Services S.p.A. Underwater hull or tank. 4,282,823, Cl. 114-341.000.

Sanyei Corporation: *See*—
Sumitomo, Kojiro, 4,282,911, Cl. 150-1.000.

Saotome, Minoru: *See*—
Odanaka, Hiroshi; Saotome, Minoru; and Kumazawa, Toshihiko, 4,283,580, Cl. 568-858.000.

Sarbutt, Keith W.: *See*—
Coale, Robert D.; Sarbutt, Keith W.; and Smith, Derrick B., 4,283,017, Cl. 241-24.000.

Sarges, Reinhard: *See*—
Belletire, John L.; and Sarges, Reinhard, 4,283,409, Cl. 424-273.00R.

Sarre, Olga: *See*—
Ganguly, Ashit K.; Girijavallabhan, Viyyoor M.; Cavender, Patricia; Sarre, Olga; and McCombie, Stuart W., 4,283,531, Cl. 544-30.000.

Sartor, Friedhelm, to Kochs Adler AG. Adjustment device in a sewing machine. 4,282,819, Cl. 112-121.120.

Sasayama, Takao, to Hitachi, Ltd. Fuel supply control system for internal combustion engine. 4,282,842, Cl. 123-440.000.

Sase, Shigeo: *See*—
Konii, Susumu; Sase, Shigeo; Yoshida, Masatoshi; Kuroda, Shoei; and Sumi, Takeshi, 4,283,319, Cl. 260-29.300.

Sato, Hideo: *See*—
Kawamura, Koichi; Katsuyama, Harumi; and Sato, Hideo, 4,283,475, Cl. 430-70.000.

Sato, Kazuhiro: *See*—
Izumita, Morishi; Umemoto, Masuo; Sato, Kazuhiro; Akiyama, Toshiyuki; Takahashi, Kenji; and Nagahara, Shusaku, 4,283,742, Cl. 358-213.000.

Sato, Kozo: *See*—
Igarashi, Akira; and Sato, Kozo, 4,283,458, Cl. 428-341.000.

Sato, Takuro: *See*—
Masuda, Yoshio; Fukasawa, Atsushi; Ashiwa, Jun; and Sato, Takuro, 4,283,697, Cl. 333-202.000.

Satoh, Gunkichi, to Kokusai Denshin Denwa Co., Ltd. Non-linearity compensating circuit for high-frequency amplifiers. 4,283,684, Cl. 330-277.000.

Satoh, Yuji, to Diesel Kiki Co., Ltd. Proportional control type remote-control direction switching control valve device. 4,282,901, Cl. 137-625.640.

Sauka, Klaus; and Muschelknautz, Hortz, deceased (by Muschelknautz, Ingeborg, heiress), to Voith Turbo GmbH & Co. KG. Vehicular braking system utilizing a hydrodynamic brake and friction brake. 4,283,092, Cl. 303-3.000.

Saurenman, Donald G., to Consan Pacific Incorporated. Ion dispenser usable for treating poultry or animal zones. 4,282,830, Cl. 119-21.000.

Savage, David W., to Exxon Research & Engineering Co. Process for the separation of contaminants from feed streams using magnetic beds. 4,283,204, Cl. 55-3.000.

Savage, Norman; and Sumner, Douglas A., to N. Greening Limited. Screens. 4,283,278, Cl. 209-395.000.

Savit, Joseph: *See*—
Lewinton, Colin H.; and Savit, Joseph, 4,283,473, Cl. 430-64.000.

Savoie, Francis R.: *See*—
Butler, Edward A.; and Savoie, Francis R., 4,283,718, Cl. 340-545.000.

Scandurra, Aldo M. High isolation multicoupling apparatus. 4,283,695, Cl. 333-124.000.

Schaaf, Norbert: *See*—
Meyer, Juergen; and Schaaf, Norbert, 4,283,702, Cl. 338-15.000.

Schachner, Julian, to Borg-Warner Corporation. Automatic clutch. 4,282,959, Cl. 192-35.000.

Schadow, Rudolf, to ITT Industries, Inc. Electrical snap-action switch. 4,283,609, Cl. 200-67.00D.

Schaefer, Manfred: *See*—
Weber, Andreas; and Schaefer, Manfred, 4,283,067, Cl. 280-5.00A.

Schaeper, Gary R.; and Olson, Richard A., to NL Industries, Inc. Annular blowout preventer with upper and lower spherical sealing surfaces. 4,283,039, Cl. 251-1.00B.

Schafer Werke GmbH: *See*—
Quandel, Siegfried, 4,282,974, Cl. 206-509.000.

Schauer, Walter; and Rosgen, Josef, to Pierburg GmbH & Co. KG. Carburetor for internal-combustion engines. 4,283,354, Cl. 261-41.00D.

Scheinpflug, Hans: *See*—
Wagner, Kuno; Niggemann, Johannes; Findeisen, Kurt; and Scheinpflug, Hans, 4,283,219, Cl. 71-28.000.

Schenk, Harald; Winter, Hermann; and Spietschka, Walter, to Hoechst Aktiengesellschaft. Cellulose hydrate tubing with aging-resistant barrier layer and processes for the manufacture thereof. 4,283,426, Cl. 426-105.000.

Scherberich, Paul: *See*—
Lussling, Theodor; Maierhofer, Alfred; and Scherberich, Paul, 4,283,337, Cl. 260-326.14T.

Schering Aktiengesellschaft: *See*—
Speck, Ulrich; Klieger, Erich; and Mutzel, Wolfgang, 4,283,381, Cl. 424-5.000.
Vidic, Hans-Jorg, 4,283,530, Cl. 536-21.000.

Schering Corporation: *See*—
Daniels, Peter J. L.; and Nagabhushan, Tattanahalli L., 4,283,528, Cl. 536-17.00R.
Ganguly, Ashit K.; Girijavallabhan, Viyyoor M.; Cavender, Patricia; Sarre, Olga; and McCombie, Stuart W., 4,283,531, Cl. 544-30.000.

Schick, John W.; Davis, Robert H.; and Andress, Harry J., to Mobil Oil Corporation. Metal working lubricant compositions. 4,283,293, Cl. 252-32.000.

Schiel, Christian, to J. M. Voith GmbH. Cylinder for a paper machine, or the like. 4,282,656, Cl. 34-110.000.

Schirmer, Ulrich; Becker, Rainer; and Wuerzer, Bruno, to BASF Aktiengesellschaft. Parabanic acid derivatives. 4,283,547, Cl. 548-307.000.

Schlaikjer, Carl R.: *See*—
Goebel, Franz; and Schlaikjer, Carl R., 4,283,469, Cl. 429-196.000.

Schlesinger, Joseph D. Biological specimen collection and transport system. 4,283,498, Cl. 435-296.000.

Schlotterer, Willy: *See*—
Grafe, Werner; and Schlotterer, Willy, 4,283,163, Cl. 407-104.000.

Schmalhofer, Markus. Separator for separating out particles of fatty substances from a gas current, more specifically from waste air from

kitchens, and a waste air duct for the separator. 4,283,209, Cl. 55-325.000.

Schmid, Werner: *See—*
de Sousa, Bernardo; Muntwyler, Rene; and Schmid, Werner, 4,283,444, Cl. 427-421.000.

Schmidt, Gunter: *See—*
Koerner, Gotz; Nickel, Friedhelm; and Schmidt, Gunter, 4,283,191, Cl. 8-128.00A.

Schmidt, Oskar: *See—*
Sibral, Walter; and Schmidt, Oskar, 4,283,548, Cl. 548-310.000.

Schmidt, Paul J.; and Hung, William M., to Sterling Drug Inc. Indole color former. 4,283,077, Cl. 282-27.500.

Schmidt, Richard. Coupling. 4,282,723, Cl. 64-19.000.

Schmitt, Bernhard, to Joachim Kreyenborg & Co. Device with a conically shaped housing and feeling for feeding plastics material to an extruder. 4,282,989, Cl. 222-316.000.

Schmitt, Frederick L.: *See—*
Sprecker, Mark A.; Schmitt, Frederick L.; Vock, Manfred H.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,283,576, Cl. 568-826.000.

Schmitt (Johnston), Dorothy D. Finger-retained key holder assemblage. 4,282,733, Cl. 70-456.00R.

Schneider, Horst W., to California Institute of Technology. Cleaning devices. 4,282,626, Cl. 15-320.000.

Schnell, William J., to Baxter Travenol Laboratories, Inc. Hollow fiber dialyzer end seal system. 4,283,284, Cl. 210-321.300.

Schnur, Rodney C., to Pfizer Inc. Isoquinoline acetic acids. 4,283,539, Cl. 546-141.000.

Schock, Hans-Werner: *See—*
Bilger, Gerhard; Hewig, Gert; Pfisterer, Fritz; and Schock, Hans-Werner, 4,283,590, Cl. 136-251.000.

Schoenfield, Palmer J.: *See—*
Hanson, Steven P.; Schoenfield, Palmer J.; and Disko, Harry, 4,282,674, Cl. 46-39.000.

Scholl, Heinz: *See—*
Boudenant, Pierre; Scholl, Heinz; and Zortea, Michel, 4,283,363, Cl. 264-171.000.

Schraube, Hansfritz, deceased: *See—*
Spielau, Paul; Putz, Peter; Weiss, Richard; and Schraube, Hansfritz, deceased, 4,282,697, Cl. 52-746.000.

Schraube, Maria Katharina, sole heir and legal representative: *See—*
Spielau, Paul; Putz, Peter; Weiss, Richard; and Schraube, Hansfritz, deceased, 4,282,697, Cl. 52-746.000.

Schrencongost, Ray B., to Marmon Company. Keyer system for an electronic organ. 4,282,791, Cl. 84-1.260.

Schuller, Leon: *See—*
Meyer, Nicolas; and Schuller, Leon, 4,283,462, Cl. 428-506.000.

Schultes, Herbert: *See—*
Engelsmann, Dieter; Lermann, Peter; Nicko, Reinhard; Schultes, Herbert; and Wagner, Karl, 4,283,132, Cl. 354-202.000.

Schultz, Roy D.: *See—*
Hummert, George T.; Garrett, Randall M.; and Schultz, Roy D., 4,283,651, Cl. 310-223.000.

Schumann, John L. Inlet flue system for banks of electrostatic precipitator chambers. 4,283,205, Cl. 55-128.000.

Schurings, Willy; Anceschi, Italo; and Reinert, Gerhard, to Ciba-Geigy Corporation. Process for whitening polyester fibres by the exhaust method. 4,283,197, Cl. 8-638.000.

Schut, Robert N.; Safdy, Max E.; and Hong, Enrique, to Miles Laboratories, Inc. Process for the preparation of 3-amino-2-(5-fluoro and 5-methoxy-1H-indol-3-yl)propanoic acid derivatives. 4,283,336, Cl. 260-326.14R.

Schut, Robert N.; Safdy, Max E.; and Hong, Enrique, to Miles Laboratories, Inc. 3-Amino or amido-2-(1H-indol-3-yl) propanoic acid derivatives. 4,283,410, Cl. 424-274.000.

Schwartz, Sidney J.; Quadri, Farooq M.; and Hsin, Chung-Herng, to Burroughs Corporation. On-chip method of balancing memory detectors and balanced detectors formed thereby. 4,283,774, Cl. 365-8.000.

Schwochau, Klaus: *See—*
Putral, Alexander; and Schwochau, Klaus, 4,283,370, Cl. 423-6.000.

Sciavolino, Frank C., to Pfizer Inc. Erythromycylamine 11,12-carbonate and derivatives thereof. 4,283,527, Cl. 536-9.000.

Science Union et Cie: *See—*
Malen, Charles; Roger, Pierre; and Laubie, Michel, 4,283,407, Cl. 424-270.000.

Scitec Corporation Ltd.: *See—*
Yerushalmy, Moshe, 4,282,883, Cl. 128-726.000.

SCM Corporation: *See—*
Carroll, Howard E.; and Sweitzer, Gerald M., 4,283,320, Cl. 260-29.6RW.
Kane, Bernard J.; and Traynor, Sean G., 4,283,347, Cl. 260-429.900.

Scott Paper Company: *See—*
Singh, Rudra P., 4,283,251, Cl. 162-17.000.

Scott, Robert J., to United States of America, Navy. Signal generator. 4,283,768, Cl. 364-607.000.

Scranton, Robert J.: *See—*
Bok, Dennis E.; Bridge, Patrick E.; Coulter, Robert W.; Denlinger, George W.; Fernalld, Clifford S., Jr.; Hill, Charlie H., Jr.; Huliba, David A.; Meckstroth, James R.; and Scranton, Robert J., 4,283,731, Cl. 346-75.000.

Sculley, George A.: *See—*
Passer, Barry E.; and Sculley, George A., 4,283,622, Cl. 235-462.000.

Sea Solar Power: *See—*
Anderson, J. Hilbert, 4,282,834, Cl. 122-367.00C.

Seidenfeld, Mark B.: *See—*
Yu, Kenneth K.; Bohr, Mark T.; and Seidenfeld, Mark B., 4,282,648, Cl. 29-571.000.

Seiler, Hans G.: *See—*
Feller, Otto; Oepen, Heinz; Kuhl, Manfred; Skrobek, Alois; Bornefeld, Horst; Seiler, Hans G.; and Johann, Walter, 4,282,784, Cl. 82-19.000.

Seilly, Alec H.; and Mowbray, Dorian F., to Lucas Industries Limited. Liquid fuel injection pump. 4,282,843, Cl. 123-450.000.

Seitz, Karl; and Mausezahl, Dieter, to Ciba-Geigy Corporation. Azo dyes, their preparation and use. 4,283,331, Cl. 260-153.000.

Seki, Hisao: *See—*
Nagatomo, Hiroto; Takagaki, Tetsuya; Seki, Hisao; Terasaki, Shirou; and Horimuki, Hitoshi, 4,282,825, Cl. 118-58.000.

Sekiguchi, Kazuhiko, to Zebra Co., Ltd. Compound writing instrument. 4,283,151, Cl. 401-33.000.

Senoo, Keizi: *See—*
Machi, Sueo; Ishigaki, Isao; Sugo, Takanobu; Murata, Kazuo; Tanso, Shiro; and Senoo, Keizi, 4,283,442, Cl. 427-171.000.

Serbinenko, Fedor A.; and Kljuchnikov, Sergei I. Occlusive device. 4,282,875, Cl. 128-325.000.

Sertich, Anthony T. Dental scaler having scaling tip particularly suitable for circular or ellipsoidal patterns of vibration. 4,283,174, Cl. 433-119.000.

Service (Engineers) Limited: *See—*
Turnock, Frederick A., 4,282,807, Cl. 101-41.000.

Sery, Robert S.: *See—*
Goldstein, David; Jones, Richard E.; and Sery, Robert S., 4,283,233, Cl. 148-11.50R.

SES, Incorporated: *See—*
Boer, Karl W., 4,283,591, Cl. 136-256.000.

Sexton, Peter; and De Cristofaro, Nicholas J., to Allied Chemical Corporation. Process for fabricating homogeneous, ductile brazing foils and products produced thereby. 4,283,225, Cl. 75-170.000.

Shaffer, Arlan J.: *See—*
Rosendall, Henry J.; and Shaffer, Arlan J., 4,282,622, Cl. 15-41.00R.

Shaffer, Harold K.: *See—*
Picard, Harrison R.; Rotondo, Claude P.; Shaffer, Harold K.; and Brown, Bertrand H., 4,283,096, Cl. 308-207.00R.

Shah, Nutan B.: *See—*
Dhabhar, Dadi J.; and Shah, Nutan B., 4,283,385, Cl. 424-52.000.

Shakespeare Company: *See—*
McLain, Philippe H., 4,283,446, Cl. 428-36.000.

Shalaev, Vitaly I.; Protasov, Alexandr K.; Vasiliev, Vladimir I.; and Ponomarev, Viktor I. Lock for portable container. 4,283,081, Cl. 292-113.000.

Sharp Kabushiki Kaisha: *See—*
Asada, Atsushi, 4,283,769, Cl. 364-710.000.
Inoue, Yukihiro, 4,283,118, Cl. 350-334.000.
Koyama, Tamotsu; and Kuroda, Yoshiharu, 4,283,650, Cl. 310-344.000.

Shaw, Clifford O., to United States of America, Navy. Direct reading capacitance meter. 4,283,676, Cl. 324-60.00C.

Shaw, John B.: *See—*
Elliott, Richard A.; Massey, Gail A.; and Shaw, John B., 4,283,122, Cl. 350-379.000.

Sheehan, Maurice J., to McBride, Edward F., a part interest. Curtain rod bracket construction. 4,283,034, Cl. 248-263.000.

Shell Oil Company: *See—*
Prats, Michael; and Williamson, Alexander S., 4,282,750, Cl. 73-155.000.

Shemenski, Robert M., Sr., to Goodyear Tire & Rubber Company, The. Aromatic triazoles and alkylamine borates for increased surface protection and improved adhesion of brass-coated steel to rubber. 4,283,460, Cl. 428-389.000.

Shepherd, Joel D. Coupling device. 4,283,154, Cl. 403-78.000.

Sherman, James E., to Owens-Illinois Inc. Two-piece bottom plate for making crown bottom glassware on the HE-28 machines. 4,283,215, Cl. 65-79.000.

Sherman, John D.: *See—*
Chao, Chien C.; and Sherman, John D., 4,283,560, Cl. 568-366.000.

Sherwood Medical Industries Inc.: *See—*
Hashmi, Tas, 4,283,244, Cl. 156-242.000.

Shibukawa, Masaru: *See—*
Kita, Yuzo; Yamaguchi, Noboru; Shibukawa, Masaru; and Minorikawa, Kazuo, 4,283,760, Cl. 364-200.000.

Shields, Harper; and Farrell, Roscoe M., to Kayser-Roth Hosiery, Inc. Circular knitting machine with latch detector. 4,282,725, Cl. 66-157.000.

Shiga, Akinobu; Matsuyama, Kiyoshi; Kakugo, Masahiro; Naito, Yukio; and Ima, Seiichiro, to Sumitomo Chemical Company, Limited. Molded products of polypropylene. 4,283,463, Cl. 428-512.000.

Shii, Kazuo: *See—*
Isakozawa, Shigeto; and Shii, Kazuo, 4,283,627, Cl. 250-311.000.

Shimizu, Kanryo; and Kobayashi, Kengo, to Fujitsu Fanuc Limited. Rotary shaft control system. 4,282,955, Cl. 192-0.096.

Shimizu, Koh: *See—*
Suganami, Takashi; Takeda, Tashiro; Nakayama, Tetsuya; Shimizu, Koh; and Manseki, Teruo, 4,282,933, Cl. 172-4.500.

Shimoji, Toshikuni: *See—*
Kunii, Yutaka; Shimoji, Toshikuni; and Tsutsumi, Masaaki, 4,282,879, Cl. 128-660.000.

Shimura, Takeo: *See—*
Kaneko, Tadashi; Shimura, Takeo; Matsumoto, Masanori; Moriguchi, Hiroyuki; and Nomori, Hiroyuki, 4,283,474, Cl. 430-69.000.

Shine, John: *See*—
Goodman, Howard M.; Shine, John; and Horst, Peter, 4,283,489, Cl. 435-6.000.
Shinei Mfg. Co., Ltd.: *See*—
Makino, Yoshihiro, 4,282,896, Cl. 137-495.000.
Shinwa Kabushiki Kaisha: *See*—
Naito, Kyohei, 4,283,027, Cl. 242-208.000.
Shionogi & Co., Ltd.: *See*—
Yoshioka, Mitsuru; Hamashima, Yoshio; and Nagata, Wataru, 4,283,333, Cl. 260-239.00A.
Shiota, Masashi: *See*—
Fujii, Setsuro; Watanabe, Tsuyoshi; Shiota, Masashi; Okumoto, Itsuo; and Kayama, Naohiro, 4,283,418, Cl. 424-310.000.
Shnirelman, Alexandr I.: *See*—
Tabakov, Vladimir P.; Kornev, Boris P.; Buchenkov, Leonid N.; Gorbunov, Andrei T.; Kaschavtsev, Vladilen E.; Pilatovsky, Viktor P.; Gurov, Evgeny I.; Obrezkov, Alexandr I.; Vakhitov, Gadel G.; Bulgakov, Rishad T.; Maximov, Vladimir P.; Maxutov, Rafkhat A.; Shnirelman, Alexandr I.; Dobroskok, Boris E.; Asfandiyarov, Khalim A.; and Fatkullin, Airat K., deceased, 4,283,088, Cl. 299-2.000.
Sholl, Jeffrey J.: *See*—
Winters, William C.; Chang, Hsien-Hsin; Anderson, George R.; Easter, Ross A.; and Sholl, Jeffrey J., 4,283,427, Cl. 426-107.000.
Showa Denko Kabushiki Kaisha: *See*—
Inoue, Chozo; and Moriguchi, Soyao, 4,283,554, Cl. 562-574.000.
Shroff, James R.; and Desai, Rohit, to USV Pharmaceutical Corporation. Pyridylacyl-hydroxamates. 4,283,541, Cl. 546-336.000.
Shuman, Robert T., to Eli Lilly and Company. Pharmacologically active peptides. 4,283,330, Cl. 260-112.50R.
Shuman, Robert T.: *See*—
Geselchen, Paul D.; and Shuman, Robert T., 4,283,329, Cl. 260-112.50R.
Sibral, Walter; and Schmidt, Oskar, to Lim-Holding S.A. Diisatoic acid or triisatoic acid derivatives. 4,283,548, Cl. 548-310.000.
Sidery, David, to Trodhjems Mek. Versted A/S. Device for distribution of a gas in a liquid medium. 4,283,357, Cl. 261-87.000.
Siefried, Walter; Janocha, Siegfried; and Crass, Gunther, to Hoechst Aktiengesellschaft. Biaxially stretched polypropylene composite film and electrical insulating film made therefrom. 4,283,453, Cl. 428-212.000.
Siegel, Melvin W., to Extranuclear Laboratories, Inc. Methods and apparatus for analysis of mixtures by mass spectrometry. 4,283,626, Cl. 250-292.000.
Siemens Aktiengesellschaft: *See*—
De Steur, Hubert; Vandenbossche, Chris; and Heyneman, Guido, 4,283,142, Cl. 356-319.000.
Ebert, Hermann, 4,283,664, Cl. 318-138.000.
Ehrgott, Roland; and Meindl, Gerhard, 4,283,699, Cl. 336-67.000.
Franetzki, Manfred; Gagneur, Klaus; and Prestele, Karl, 4,282,872, Cl. 128-213.00R.
Goser, Karl, 4,283,696, Cl. 333-165.000.
Hofmann, Horst, 4,283,119, Cl. 350-344.000.
Kleeberg, Wolfgang; Rogler, Wolfgang; Gentzkow, Wolfgang V.; and Rubner, Roland, 4,283,505, Cl. 525-281.000.
Muenz, Wolf-Dieter; and Poetzlberger, Hans W., 4,283,485, Cl. 430-314.000.
Roesler, Helmut, 4,283,639, Cl. 307-269.000.
Spirk, Franz, 4,283,648, Cl. 310-269.000.
Zitzelsberger, Helmut, 4,283,588, Cl. 136-246.000.
Siemens Corporation: *See*—
Provasnik, Robert, 4,282,754, Cl. 73-346.000.
Sienkiewicz, Henry R., to Spadone Machine Company, Inc. Material process machinery. 4,283,024, Cl. 242-75.300.
Siewert, Wolfgang: *See*—
Heinbockel, Wolfgang; Siewert, Wolfgang; Kahmann, Albrecht; and Lambrecht, Gerhard, 4,283,275, Cl. 209-3.000.
Sifford, Bruce M.; and Magill, D. Thomas, to Ricoh Company, Ltd. Erasure zone decision feedback phase lock loop for carrier recovery in data modems. 4,283,682, Cl. 329-50.000.
Signetics Corporation: *See*—
Lieux, J. Darryl, 4,283,673, Cl. 323-316.000.
Signode Corporation: *See*—
Massion, Robert J.; Lems, Peter; and Nix, Robert J., 4,282,907, Cl. 140-93.400.
Sih, John C., to Upjohn Company, The. 19,20-Didehydro-PG_2 amides. 4,283,350, Cl. 564-189.000.
Sih, John C., to Upjohn Company, The. 19,20-Didehydro-13,14-dihydro-PG_2 amides. 4,283,351, Cl. 564-189.000.
Sih, John C., to Upjohn Company, The. 11-Deoxy-11-hydroxymethyl-inter-oxa-19-oxo-PGE_1 compounds. 4,283,552, Cl. 560-121.000.
Sih, John C., to Upjohn Company, The. 2-Decarboxy-2-aminomethyl-19-hydroxy-PG compounds. 4,283,558, Cl. 564-305.000.
Sih, John C., to Upjohn Company, The. 2-Decarboxy-2-hydroxymethyl-19-hydroxy-6a-carba-PGI_2 compounds. 4,283,575, Cl. 568-819.000.
Silk, Murray R.: *See*—
Garwood, William E.; and Silk, Murray R., 4,283,271, Cl. 208-59.000.
Garwood, William E.; and Silk, Murray R., 4,283,272, Cl. 208-59.000.
Silverman, Neil D.: *See*—
Cormier, Alan D.; Webster, Milo E.; Czaban, John D.; Silverman, Neil D.; and Noble, Lynn W., 4,283,262, Cl. 204-195.00M.
Silverman, Ronald: *See*—
Fortino, Andres G.; Geipel, Henry J., Jr.; Heller, Lawrence G.; and Silverman, Ronald, 4,282,646, Cl. 29-571.000.
Sima, Syohei: *See*—
Higashinakagawa, Iwao; Sima, Syohei; and Moriya, Takahiko, 4,283,439, Cl. 427-89.000.
Simbirtsev, Nikolai L.: *See*—
Voronkov, Mikhail G.; Platonova, Ada T.; Simbirtsev, Nikolai L.; Dyakov, Valery M.; Dyban, Andrei P.; and Kuznetsov, Igor G., 4,283,419, Cl. 424-316.000.
Simiand, Jacques: *See*—
Pigerol, Charles; Vernieres, Jean-Claude; Eymard, Pierre; Simiand, Jacques; Broll, Madeleine; and Lacolle, Jean-Yves, 4,283,420, Cl. 424-317.000.
Simmons, Carl E., to United Aircraft Products, Inc. Multi-pass heat exchanger circuit. 4,282,927, Cl. 165-166.000.
Simpson, Danny E.: *See*—
Grubb, Lawrence B.; Simpson, Danny E.; Hoffman, Louis S.; and Williams, David M., 4,282,679, Cl. 46-193.000.
Singer Company, The: *See*—
Beckerman, Howard L.; and Trimmer, William S. N., 4,283,659, Cl. 315-161.000.
Herr, John A.; and Jaffe, Wolfgang, 4,283,647, Cl. 310-154.000.
Kron, Gerald J.; and Hale, Timothy E., 4,283,177, Cl. 434-59.000.
Singh, Rudra P., to Scott Paper Company. Ozone effluent bleaching. 4,283,251, Cl. 162-17.000.
Sirsi, Ramesh M., to Harris Corporation. Method of fabricating lateral PNP transistors utilizing selective diffusion and counter doping. 4,283,236, Cl. 148-187.000.
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Davies, William D.; Skelhorne, Graham G.; and Warren, John B., 4,283,480, Cl. 430-270.000.
Skingley, John A., to Plessey Handel und Investments AG. Feedback biasing circuit arrangement for transistor amplifier. 4,283,641, Cl. 307-297.000.
Skinner, Robert T. J., to Lucas Industries Limited. Fuel pumping apparatus. 4,282,844, Cl. 123-502.000.
Skrobek, Alois: *See*—
Feller, Otto; Oepen, Heinz; Kuhl, Manfred; Skrobek, Alois; Bornefeld, Horst; Seiler, Hans G.; and Johann, Walter, 4,282,784, Cl. 82-19.000.
Smith, Derrick B.: *See*—
Coale, Robert D.; Sarbutt, Keith W.; and Smith, Derrick B., 4,283,017, Cl. 241-24.000.
Smith, Frederick J.: *See*—
James, Kenneth; and Smith, Frederick J., 4,283,310, Cl. 260-23.0XA.
James, Kenneth; and Smith, Frederick J., 4,283,315, Cl. 260-23.0XA.
Smith, Gregg H.: *See*—
Todd, Robert J.; Smith, Gregg H.; and Reynolds, Gordon S., 4,282,881, Cl. 128-674.000.
Smith International Inc.: *See*—
Longmore, Thomas L., 4,282,942, Cl. 175-269.000.
Perkin, Gregg S., 4,282,941, Cl. 175-267.000.
Smith, Kenneth R., to Kross, Inc. Automotive engine lub-oil drainage and disposal structure. 4,283,032, Cl. 248-97.000.
Smith, Larry G., to United Merchants and Manufacturers, Inc. Foam random dyeing system. 4,282,729, Cl. 68-205.00R.
Smith, Robert G., to Kleen-Rite, Inc. Method and apparatus for reclaiming drycleaning fluid. 4,283,279, Cl. 210-123.000.
Smith, Sydney J.; and Chambers, Peter F., to British Leyland UK Limited. Hand and guard rails. 4,283,152, Cl. 403-3.000.
Smith, Todd I.: *See*—
Madey, John M. J.; Elias, Luis R.; and Smith, Todd I., 4,283,687, Cl. 331-94.5PE.
Smith, William J., to Weatherly Foundry & Manufacturing Co. Apparatus for removing no-bake coatings from foundry sand, and classifying the reclaimed sand according to particle size. 4,283,015, Cl. 241-5.000.
Smitherman, Thomas L.: *See*—
Meyer, Herbert J.; and Smitherman, Thomas L., 4,283,778, Cl. 367-58.000.
Smock, William L. Oscillating-accumulating conveyor. 4,282,970, Cl. 198-772.000.
Snia Viscosa Societa' Nazionale Industria Applicazioni Viscosa S.p.A.: *See*—
Mosseri, Giuseppe; and Lucioni, Enrico, 4,282,637, Cl. 28-254.000.
Snyder, Michael D.: *See*—
Bates, Erwin F.; and Snyder, Michael D., 4,282,965, Cl. 198-380.000.
Bates, Erwin F.; and Snyder, Michael D., 4,282,966, Cl. 198-382.000.
Snyder, R. David; Iwerks, Donald W.; Otto, Robert R.; Richardson, Lee R.; and Inglish, David S., to Walt Disney Productions. Automatic camera control for creating special effects in motion picture photography. 4,283,766, Cl. 364-525.000.
Soborowski, Michael J.: *See*—
Molins, Desmond W.; and Soborowski, Michael J., 4,283,187, Cl. 493-48.000.
Societa' Italiana Vetro-SIV-S.p.A.: *See*—
Paudice, Ciro; and De Lena, Oscar, 4,283,440, Cl. 427-108.000.
Societe Chimique des Charbonnages CdF Chimie: *See*—
Dalens, Marcel; and Haas, Armand, 4,282,682, Cl. 47-9.000.
Societe Chimiques des Charbonnages: *See*—
Meyer, Nicolas; and Schuller, Leon, 4,283,462, Cl. 428-506.000.
Societe des Plastiques de Carmaux Scasar: *See*—
Dalens, Marcel; and Haas, Armand, 4,282,682, Cl. 47-9.000.

Societe Nationale Elf Aquitaine (Production): *See—*
Voirin, Robert; Mathieu, Pierre; and Chambu, Claude, 4,283,380, Cl. 423-574.00R.
Societe Nord-France d'Entreprises, Genesales et de Constructions en beton arne: *See—*
Michel, Bertrand, 4,282,696, Cl. 52-745.000.
Societe pour l'Equipement de Vehicules: *See—*
Guichard, Roland R., 4,282,767, Cl. 74-427.000.
Soderstrom, Melvin A.: *See—*
Ferrill, Jess B.; Hughes, Richard L.; and Soderstrom, Melvin A., 4,283,105, Cl. 339-97.00R.
Soeters, Cornelis J.; Paulussen, Cornelis N.; Padley, Frederick B.; and Tresser, David, to Lever Brothers Company. Hard fat replacer and chocolate containing same. 4,283,436, Cl. 426-607.000.
Soleau, Bertrand S. Thin-line collectors. 4,282,862, Cl. 126-439.000.
Somers, M. John, to Dayco Corporation. Vacuum apparatus having protective device for operator and method. 4,283,594, Cl. 174-47.000.
Sony Corporation: *See—*
Hongu, Masayuki; Ohmuro, Shigeru; and Tokuhara, Masaharu, 4,283,792, Cl. 455-192.000.
Kondo, Masayuki; and Kishi, Yoshio, 4,283,644, Cl. 310-68.00R.
Kuper, Douglas D.; and Menezes, William A., 4,283,745, Cl. 360-13.000.
Morio, Minoru; Nakamura, Tadahiko; Kambara, Masahiro; and Kubota, Yukio, 4,283,736, Cl. 358-4.000.
Nakano, Kenji; and Nakamura, Tadahiko, 4,283,671, Cl. 318-608.000.
Nikami, Akira, 4,283,737, Cl. 358-8.000.
Soo Hoo, Kathleen G.: *See—*
Doster, Robert C.; Judson, Beth R.; and Soo Hoo, Kathleen G., 4,283,430, Cl. 426-284.000.
Sorenson Research Co., Inc.: *See—*
Todd, Robert J.; Smith, Gregg H.; and Reynolds, Gordon S., 4,282,881, Cl. 128-674.000.
Southwire Company: *See—*
Stewart, Maxson L., 4,283,224, Cl. 75-99.000.
SOVAM: *See—*
Morin, Andre M. R., 4,283,086, Cl. 296-178.000.
Spadone Machine Company, Inc.: *See—*
Sienkiewicz, Henry R., 4,283,024, Cl. 242-75.300.
Spakowski, Hans: *See—*
Stehl, Otto; and Spakowski, Hans, 4,282,856, Cl. 126-417.000.
Sparber, Richard G., to Bell Telephone Laboratories, Incorporated. Impedance/admittance measuring circuit. 4,283,675, Cl. 324-57.00R.
Speck, Ulrich; Klieger, Erich; and Mutzel, Wolfgang, to Schering Aktiengesellschaft. Triiodinated aminoacetamido isophthalamide x-ray contrast agents. 4,283,381, Cl. 424-5.000.
Specktor, Gerald A. Height extender for use in connection with an apparatus for repairing and straightening. 4,282,740, Cl. 72-461.000.
Spector, Donald. Scented sticker. 4,283,011, Cl. 239-36.000.
Speer, Lawrence L. Method for repairing grained or embossed vinyl sheeting with imprinted vinyl molds. 4,283,240, Cl. 156-98.000.
Speers, Jerry M.: *See—*
Maus, L. Donald; Speers, Jerry M.; and Howell, James D., 4,282,939, Cl. 175-7.000.
Speicher, Emmett J.: *See—*
Binau, Douglas E.; and Speicher, Emmett J., 4,283,254, Cl. 203-4.000.
Spence, Lewis C.; and Martin, Stephen, to Spence, Lewis C. Dual frequency distance measuring system. 4,283,726, Cl. 343-112.00D.
Spencer Wright Industries, Inc.: *See—*
Ingram, Gary L., 4,282,818, Cl. 112-79.00R.
Sperry Corporation: *See—*
Clock, Donald P.; and Easter, Finis C., 4,283,790, Cl. 375-71.000.
Cools, Antoon S. P., 4,282,803, Cl. 100-5.000.
Cools, Antoon S. P., 4,282,804, Cl. 100-5.000.
Nardi, Anthony P., 4,283,780, Cl. 367-82.000.
Zipser, Randall E., 4,282,969, Cl. 198-747.000.
Spielau, Paul; Putz, Peter; Weiss, Richard; and Schraube, Hansfritz, deceased (by Schraube, Maria Katharina, sole heir and legal representative), to Dynamit Nobel Aktiengesellschaft. Insulating panel for roof coverings. 4,282,697, Cl. 52-746.000.
Spietschka, Walter: *See—*
Schenk, Harald; Winter, Hermann; and Spietschka, Walter, 4,283,426, Cl. 426-105.000.
Spirk, Franz, to Siemens Aktiengesellschaft. Synchronous electric machine with salient poles in the rotor. 4,283,648, Cl. 310-269.000.
Sportelli, Frank A. Printing screen and method of making same. 4,283,471, Cl. 430-6.000.
Sprague Electric Company: *See—*
Burn, Ian, 4,283,753, Cl. 361-321.000.
Thompson, David G.; and Ogilvie, John T., 4,282,645, Cl. 29-570.000.
Sprecker, Mark A.; Schmitt, Frederick L.; Vock, Manfred H.; Vinals, Joaquin F.; and Kiwala, Jacob, to International Flavors & Fragrances Inc. Cyclohexenemethanols. 4,283,576, Cl. 568-826.000.
Springer, Helmut: *See—*
Bernhagen, Wolfgang; Bach, Hanswilhelm; Brundin, Eike; Gick, Wilhelm; Springer, Helmut; and Hack, Adolf, 4,283,564, Cl. 568-461.000.
Sproul, Nolte V., to Dyneer Corporation. Hydraulic belt tensioner construction. 4,283,181, Cl. 474-110.000.
Staab, Thomas E.; and Antonini, Joseph, to Dana Corporation. Rotary shaft seal. 4,283,064, Cl. 277-81.00R.
Stadler, Istvan: *See—*
Szabo, Tibor; Institoris, Laszlo; Kovacs, Gabor; Stadler, Istvan; and Koszegi, Bela, 4,283,413, Cl. 424-285.000.
Staley, Warren D., to Corning Glass Works. Mold mechanism. 4,283,218, Cl. 65-360.000.
Stammer, Charles H., to Research Corporation. Preparation of dehydropeptides. 4,283,328, Cl. 260-112.50R.
Standard Microsystems Corporation: *See—*
Richman, Paul, 4,282,647, Cl. 29-571.000.
Standard Oil Company, The: *See—*
Greene, Janice L., 4,283,524, Cl. 528-363.000.
Velenyi, Louis J.; and Dolhyj, Serge R., 4,283,583, Cl. 585-467.000.
Standard Oil Company (Indiana): *See—*
Udovich, Carl A.; and Meyers, Bernard L., 4,283,288, Cl. 252-437.000.
Starks, Charles M.: *See—*
Weimer, Dean R.; and Starks, Charles M., 4,283,514, Cl. 526-84.000.
Statz, Robert J.: *See—*
Murphy, Charles V.; and Statz, Robert J., 4,283,317, Cl. 260-27.00R.
Stauffer Chemical Company: *See—*
Brison, Robert J.; and Gathje, John C., 4,283,277, Cl. 209-166.000.
Fancher, Llewellyn W., 4,283,395, Cl. 424-211.000.
Lauck, Robert M., 4,283,435, Cl. 426-551.000.
Steele, Gerald G.: *See—*
Clark, Charles R.; Hanson, Lowell R.; and Steele, Gerald G., 4,282,909, Cl. 141-98.000.
Steele, James A.: *See—*
Kopich, Leonard F.; and Steele, James A., 4,282,949, Cl. 180-252.000.
Stehl, Otto; and Spakowski, Hans, to BFG Glassgroup. Solar-energy collector. 4,282,856, Cl. 126-417.000.
Steigerwald, Carl J.; and Villari, Frank K., to Kendall Company, The. Protective headgear. 4,282,610, Cl. 2-414.000.
Stein Industrie: *See—*
Andro, Jean; Bessouat, Roger; Cerdan, Jean-Pierre; and Talleu, Patrick, 4,283,206, Cl. 55-187.000.
Steinberger, Michael L., to Bell Telephone Laboratories, Incorporated. Adaptive cross-polarization interference cancellation arrangements. 4,283,795, Cl. 455-283.000.
Stephens, Donald R.: *See—*
Forgey, James H.; Stephens, Donald R.; and Tan, Engnam A., 4,282,812, Cl. 102-318.000.
Stephenson, Rebecca A. G.: *See—*
DuBois, Grant E.; and Stephenson, Rebecca A. G., 4,283,434, Cl. 426-548.000.-
Sterbutzel, Gerald A., to Calspan Corporation. Two piece caseless round and gun therefor. 4,282,813, Cl. 102-431.000.
Sterling Drug Inc.: *See—*
Schmidt, Paul J.; and Hung, William M., 4,283,077, Cl. 282-27.500.
Sterzer, Fred, to RCA Corporation. Ridge-waveguide applicator for treatment with electromagnetic energy. 4,282,887, Cl. 128-804.000.
Stevens, Myron T., to Outboard Marine Corporation. Filament trimmer mower with folding shield. 4,282,704, Cl. 56-320.100.
Stewart, Maxson L., to Southwire Company. Separative treatment of anode slime. 4,283,224, Cl. 75-99.000.
Stewart, Robert C., to Tellabs, Inc. Signal processor for digital echo canceller. 4,283,770, Cl. 364-757.000.
Stewart, Vernon. Mailbox letter canceler. 4,282,809, Cl. 101-212.000.
Stiles, Walter J.: *See—*
Salisbury, Winfield W.; and Stiles, Walter J., 4,282,940, Cl. 175-11.000.
Stinger, Kenneth R.: *See—*
Mossman, Ralph A.; and Stinger, Kenneth R., 4,283,655, Cl. 313-462.000.
Stockdale, Trevor J.; and Moss, Anthony R. L., to Pye (Electronic Products) Limited. Sample cell and stirrer for spectrophotometry. 4,283,141, Cl. 356-246.000.
Stoewe, Anneliese: *See—*
Forberg, Horst; Hegner, Gunter; and Stoewe, Anneliese, 4,283,103, Cl. 339-59.00M.
Stoner, Eugene M.; and Gillum, Richard R., to ARES, Inc. Double acting, pneumatic bolt and sear buffer for automatic cannon. 4,282,796, Cl. 89-198.000.
Stottmann, Richard L.; and Losert, Gerhard K., to General Electric Co. Refrigerator air baffle control. 4,282,720, Cl. 62-180.000.
Stotz, Wolf-Gunter: *See—*
Braun, Heinz; Kiesel, Karl; and Stotz, Wolf-Gunter, 4,283,023, Cl. 242-67.10R.
Stripling, Sheldon A., Jr. Automatic elevator control for model glider. 4,282,675, Cl. 46-81.000.
Stroman, Fritz: *See—*
Engel, Jurgen; Kleemann, Axel; Stroman, Fritz; and Thiemer, Klaus, 4,283,405, Cl. 424-267.000.
Suganami, Takashi; Takeda, Tashiro; Nakayama, Tetsuya; Shimizu, Koh; and Manseki, Teruo, to Kabushiki Kaisha Komatsu Seisakusho. Automatic control device for an earth working equipment. 4,282,933, Cl. 172-4.500.
Sugano, Kazuhiko: *See—*
Iwanaga, Kazuyoshi; Sugano, Kazuhiko; and Ohtsuka, Kunio, 4,282,781, Cl. 74-869.000.
Suganuma, Toshio: *See—*
Matsubara, Akira; Sakai, Hideaki; Suganuma, Toshio; Fukazawa, Nobuyuki; and Nakano, Takuo, 4,283,398, Cl. 424-246.000.

Sugimoto, Hiroshi; and Nakano, Jiro, to Toyota Jidosha Kogyo Kabushiki Kaisha. Sub-transmission control system for providing engine braking. 4,282,957, Cl. 192-9.000.

Sugo, Takanobu: *See*—
Machi, Sueo; Ishigaki, Isao; Sugo, Takanobu; Murata, Kazuo; Tanso, Shiro; and Senoo, Keizi, 4,283,442, Cl. 427-171.000.

Sullivan, James P.: *See*—
Nalbandian, A. Eugene; and Sullivan, James P., 4,283,757, Cl. 362-120.000.

Sulzer Morat GmbH: *See*—
Elsasser, Heinrich, 4,282,724, Cl. 66-75.200.

Sumi, Takeshi: *See*—
Konii, Susumu; Sase, Shigeo; Yoshida, Masatoshi; Kuroda, Shoei; and Sumi, Takeshi, 4,283,319, Cl. 260-29.300.

Sumitomo Chemical Company, Limited: *See*—
Atsumi, Toshio; Takebayashi, Yoshiaki; and Okajima, Hideki, 4,283,422, Cl. 424-325.000.
Fuyama, Hiroshi; and Tsuji, Kozo, 4,283,415, Cl. 424-304.000.
Horide, Fumio; and Tsuji, Kozo, 4,283,222, Cl. 71-120.000.
Nakatsuka, Kiyoharu; and Abeta, Sadaharu, 4,283,195, Cl. 8-524.000.
Shiga, Akinobu; Matsuyama, Kiyoshi; Kakugo, Masahiro; Naito, Yukio; and Ima, Seiichiro, 4,283,463, Cl. 428-512.000.
Tsutsui, Nobuhiro; Takao, Seiji; and Murase, Ichiki, 4,283,359, Cl. 264-22.000.
Ueno, Katsuji; and Maruyama, Takashi, 4,283,511, Cl. 525-392.000.

Sumitomo, Kojiro, to Sanyei Corporation. Combined hanger and bag for a hanger bag. 4,282,911, Cl. 150-1.000.

Summit Systems, Inc. (Interscience Systems): *See*—
Lucero, Andres R.; Williams, David E.; and Nelson, James L., 4,283,709, Cl. 340-147.00R.

Sumner, Douglas A.: *See*—
Savage, Norman; and Sumner, Douglas A., 4,283,278, Cl. 209-395.000.

Sun Chemical Corporation: *See*—
Horwitt, Laurence G., 4,283,703, Cl. 338-34.000.

Sun, Liang-Hung. Attache case having drawer apparatus. 4,283,098, Cl. 312-319.000.

Sundberg, Michael W.: *See*—
Frank, David S.; and Sundberg, Michael W., 4,283,382, Cl. 424-8.000.

Surma, Erich: *See*—
Peters, Heinrich; and Surma, Erich, 4,283,297, Cl. 252-70.000.

Suspa Federungstechnik, Fritz Bauer & Sohne oHG: *See*—
Bauer, Fritz, 4,283,033, Cl. 248-188.000.

Susz, Dietfried: *See*—
Melwisch, Harald E.; and Susz, Dietfried, 4,283,744, Cl. 360-10.000.

Sutton, George W.: *See*—
Daugherty, Jack D.; Kantrowitz, Arthur R.; Sutton, George W.; and Zappa, Oswald L., 4,283,686, Cl. 331-94.50G.

Sutton, Richard C.: *See*—
Campbell, Gerald A.; Hollister, Kenneth R.; and Sutton, Richard C., 4,283,504, Cl. 525-261.000.

Svoboda, Robert: *See*—
Bodmer, Maurice A.; and Svoboda, Robert, 4,283,200, Cl. 23-230.00C.

Swartzbaugh, Peter T., to Owens-Illinois, Inc. Container with improved spring-like hinge. 4,282,983, Cl. 220-335.000.

Sweitzer, Gerald M.: *See*—
Carroll, Howard E.; and Sweitzer, Gerald M., 4,283,320, Cl. 260-29.6RW.

Swenson, William A.: *See*—
Griffin, Rodney B.; and Swenson, William A., 4,283,100, Cl. 339-19.000.

Swift, William R.; Herrod, Don W.; and Marsh, James M., to AM International, Inc. Microfiche reader printer having multi-format capabilities. 4,283,136, Cl. 355-45.000.

Swope, C. Hermas, to American Optical Corporation. Instrument for optically measuring soft contact lens parameters. 4,283,139, Cl. 356-125.000.

Synco National Ltd.: *See*—
Butler, Edward A.; and Savoie, Francis R., 4,283,718, Cl. 340-545.000.

Syntex (U.S.A.) Inc.: *See*—
Nash, John E., 4,283,175, Cl. 433-119.000.

Syrov, Anatoly A.: *See*—
Ivanchev, Sergei S.; Syrov, Anatoly A.; Pavljuchenko, Valery N.; Lesnikova, Ninel N.; and Rozhkova, Diana A., 4,283,553, Cl. 560-176.000.

Syvakari, Pertti, to ASEA Aktiebolag. Hot isostatic pressure furnace with enhanced insulation properties. 4,283,172, Cl. 432-247.000.

Szabo, Elek I., to Forsyth Dental Infirmary for Children. Method of resolving biological solutions. 4,283,199, Cl. 23-230.00B.

Szabo, Jozsef: *See*—
Fridrich, Janos; Hetesi, Zoltan; Kisteleki, Gusztav; Misangyi, Laszlo; Szegletes, Emil; and Szabo, Jozsef, 4,283,598, Cl. 174-169.000.

Szabo, Lajos: *See*—
Szantay, Csaba; Szabo, Lajos; Kalaus, Gyorgy; Dancsi, Lajos; Keve, Tibor; Karpati, Egon; and Szporny, Laszlo, 4,283,401, Cl. 424-256.000.

Szabo, Tibor; Institoris, Laszlo; Kovacs, Gabor; Stadler, Istvan; and Koszegi, Bela, to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara RT. Method for inhibiting aggregation of human thrombocytes. 4,283,413, Cl. 424-285.000.

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Szegletes, Emil: *See*—
Fridrich, Janos; Hetesi, Zoltan; Kisteleki, Gusztav; Misangyi, Laszlo; Szegletes, Emil; and Szabo, Jozsef, 4,283,598, Cl. 174-169.000.

Szporny, Laszlo: *See*—
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Szydlowski, Donald F.; Kuzminskas, Vaidotas; and Bittner, Joseph E., to United Technologies Corporation. Process for vaporizing a liquid hydrocarbon fuel. 4,282,832, Cl. 122-28.000.

Tabakov, Vladimir P.; Kornev, Boris P.; Buchenkov, Leonid N.; Gorbunov, Andrei T.; Kaschavtsev, Vladilen E.; Pilatovsky, Viktor P.; Gurov, Evgeny I.; Obrezkov, Alexandr I.; Vakhitov, Gadel G.; Bulgakov, Rishad T.; Maximov, Vladimir P.; Maxutov, Rafkhat A.; Shnirelman, Alexandr I.; Dobroskok, Boris E.; Asfandiyarov, Khalim A.; and Fatkullin, Airat K., deceased (by Fatkullina, Neili N., administrator). Thermal—mining method of oil production. 4,283,088, Cl. 299-2.000.

Takagaki, Tetsuya: *See*—
Nagatomo, Hiroto; Takagaki, Tetsuya; Seki, Hisao; Terasaki, Shirou; and Horimuki, Hitoshi, 4,282,825, Cl. 118-58.000.

Takagi, Yasuo; Onoda, Michio; Katsumata, Masaaki; and Yoneda, Kenji, to Nissan Motor Company, Limited. Ignition timing control system for an internal combustion engine. 4,282,841, Cl. 123-425.000.

Takahashi, Akio; Itoh, Yutaka; Wajima, Motoyo; Morishita, Hirosada; and Tsukanishi, Kenji, to Hitachi Chemical Company, Ltd. Process for preparing thermosetting prepolymer from mixture of polyfunctional maleimide and bis-maleimide. 4,283,522, Cl. 528-170.000.

Takahashi, Ken: *See*—
Tomoda, Hajime; and Takahashi, Ken, 4,282,918, Cl. 152-353.00C.

Takahashi, Kenji: *See*—
Izumita, Morishi; Umemoto, Masuo; Sato, Kazuhiro; Akiyama, Toshiyuki; Takahashi, Kenji; and Nagahara, Shusaku, 4,283,742, Cl. 358-213.000.

Takahata, Kenichi, to Matsui Universal Joint Mfg. Co. Coupling device. 4,283,158, Cl. 403-322.000.

Takamatsu, Hideki: *See*—
Yoshimura, Masahito; Hoshiyama, Satoshi; Takamatsu, Hideki; Kobayashi, Hiroshi; and Takigawa, Shinichiro, 4,283,586, Cl. 585-512.000.

Takao, Seiji: *See*—
Tsutsui, Nobuhiro; Takao, Seiji; and Murase, Ichiki, 4,283,359, Cl. 264-22.000.

Takashima, Toshiyuki: *See*—
Kondo, Kiyoshi; Takashima, Toshiyuki; and Tunemoto, Daici, 4,283,341, Cl. 260-343.30R.

Takasuke, Fukui: *See*—
Kazuomi, Yamamura; Takasuke, Fukui; Yoshinao, Iwamoto; Yuichi, Shirasaki; Masayuki, Fujise; Hikoaki, Sugimoto; Kikuo, Shirai; and Minoru, Yoshida, 4,283,681, Cl. 324-326.000.

Takata, Akira: *See*—
Yamada, Kenji; Takata, Akira; Ii, Akira; and Ohiwa, Katsuhiko, 4,282,840, Cl. 123-412.000.

Takauji, Kiyomi: *See*—
Obayashi, Nobuharu; Hashizume, Hikaru; Kameyama, Seiji; Ezawa, Sadaaki; Kondo, Tatsunori; Takauji, Kiyomi; and Aoyama, Tohru, 4,282,785, Cl. 84-1.010.

Takebayashi, Yoshiaki: *See*—
Atsumi, Toshio; Takebayashi, Yoshiaki; and Okajima, Hideki, 4,283,422, Cl. 424-325.000.

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James, Kenneth; and Smith, Frederick J., 4,283,310, Cl. 260-23.0XA.
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Johnson, Keith A., 4,282,828, Cl. 119-3.000.

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Frech, Kenneth J.; and Tazuma, James J., 4,283,373, Cl. 423-226.000.

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Teague, Edward W.; Hance, Max H.; and Neal, Carl R., to Burlington Industries, Inc. Brushed stretch denim fabric and process therefor: indigo dyeing. 4,283,194, Cl. 8-494.000.

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Technicare Corporation: *See—*
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Masson, Pierre L.; and Heremans, Joseph F., 4,283,383, Cl. 424-12.000.

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Mossman, Ralph A.; and Stinger, Kenneth R., 4,283,655, Cl. 313-462.000.
Philipp, Harald, 4,283,713, Cl. 340-347.0SH.
Rieger, Michael L., 4,283,765, Cl. 364-521.000.

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Teleskivi, Peter F., to Jacmir Nominees Pty. Ltd. Fire resistant structure. 4,282,687, Cl. 49-503.000.

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Stewart, Robert C., 4,283,770, Cl. 364-757.000.

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Nebzydoski, John W.; and Patmore, Edwin L., 4,283,296, Cl. 252-49.900.
Pitts, Robert W., Jr.; Arnold, Dan M.; and Paap, Hans J., 4,282,760, Cl. 73-861.020.

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Roques, Rodney A.; and Wakefield, Gene F., 4,283,247, Cl. 156-601.000.
Trenkler, George; Delagi, Richard G.; and Padovani, Francois A., 4,283,714, Cl. 340-365.00L.

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Cogan, Leo M., 4,283,281, Cl. 210-232.000.

Th. Goldschmidt AG: *See—*
Fenner, Jurgen, 4,283,377, Cl. 423-419.00P.
Koerner, Gotz; Nickel, Friedhelm; and Schmidt, Gunter, 4,283,191, Cl. 8-128.00A.

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Reed, Russell, Jr.; and Price, Raymond M., 4,283,237, Cl. 149-19.910.

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Toko, Inc.: *See—*
Koiki, Tsutomu, 4,283,759, Cl. 363-19.000.

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Becker, Gert; Oesch, Johann U.; Poeselt, Horst; Tomlinson, Alan D.; and Walz, Kurt, 4,283,299, Cl. 252-90.000.

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Lang, Philip C., 4,283,556, Cl. 564-144.000.

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Mikami, Ryuzo, 4,283,513, Cl. 525-476.000.

Toro Company, The: *See—*
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Abe, Yoichi, 4,282,677, Cl. 46-118.000.
Toyo Kogyo Co., Ltd.: *See*—
Harada, Setsuo; and Yokooku, Katsuhiko, 4,283,368, Cl. 422-181.000.
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Kitamura, Yoichi; Hotta, Hisashi; and Ito, Makoto, 4,282,981, Cl. 220-75.000.
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Sugimoto, Hiroshi; and Nakano, Jiro, 4,282,957, Cl. 192-9.000.
Yamada, Kenji; Takata, Akira; Ii, Akira; and Ohiwa, Katsuhiko, 4,282,840, Cl. 123-412.000.
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Tracy, Wayne R. Tool for retaining and releasing ringed elements. 4,283,082, Cl. 294-15.000.
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Ring, H. Kenneth, Jr., 4,283,008, Cl. 236-49.000.
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Kane, Bernard J.; and Traynor, Sean G., 4,283,347, Cl. 260-429.900.
Trenkler, George; Delagi, Richard G.; and Padovani, Francois A., to Texas Instruments Incorporated. Magnetic keyboard system. 4,283,714, Cl. 340-365.00L.
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Soeters, Cornelis J.; Paulussen, Cornelis N.; Padley, Frederick B.; and Tresser, David, 4,283,436, Cl. 426-607.000.
Trimmer, Paul A., to Amerace Corporation. Self-locking nut and manufacture and component therefor. 4,282,913, Cl. 411-303.000.
Trimmer, William S. N.: *See*—
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Triplex Safety Glass Company Limited: *See*—
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Trotta, Robert A., to Gillette Company, The. Razor blade assembly. 4,282,650, Cl. 30-47.000.
Trotta, Robert A., to Gillette Company, The. Razor handle. 4,282,651, Cl. 30-89.000.
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Trumpy, J. Walter. Wind power system. 4,282,944, Cl. 180-2.00A.
TRW Inc.: *See*—
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Tsunekawa, Tokuichi; Masunaga, Makoto; Hosoe, Kazuya; Niwa, Yukichi; Owada, Mitsutoshi; and Asano, Noriyuki, to Canon Kabushiki Kaisha. Image scanning system. 4,283,137, Cl. 356-4.000.
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Turner, Norman L., to Varian Associates, Inc. Beam scanning and method of use for ion implantation. 4,283,631, Cl. 250-492.00B.
Turnock, Frederick A., to Service (Engineers) Limited. Off-set screen-printing machine for decorating ceramic ware. 4,282,807, Cl. 101-41.000.
Tweed, Dennis O. Animal observatory and toy apparatus. 4,282,829, Cl. 119-19.000.
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Nalbandian, A. Eugene; and Sullivan, James P., 4,283,757, Cl. 362-120.000.
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Udovich, Carl A.; and Meyers, Bernard L., to Standard Oil Company (Indiana). Oxidation of butane to maleic anhydride. 4,283,288, Cl. 252-437.000.
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Lowther, Frank E., 4,283,291, Cl. 250-536.000.
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Merrell, Jimmy D., 4,282,759, Cl. 73-827.000.
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Walton, Theodore R., 4,283,557, Cl. 564-272.000.
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Wooden, Bruce J.; and Edelman, Seymour, 4,283,461, Cl. 428-422.000.

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Werner, Franz, 4,283,026, Cl. 242-199.000.

United Technologies Corporation: *See*—
Picard, Harrison R.; Rotondo, Claude P.; Shaffer, Harold K.; and Brown, Bertrand H., 4,283,096, Cl. 308-207.00R.
Szydlowski, Donald F.; Kuzminskas, Vaidotas; and Bittner, Joseph E., 4,282,832, Cl. 122-28.000.

Universal Instruments Corporation: *See*—
Bates, Erwin F.; and Snyder, Michael D., 4,282,965, Cl. 198-380.000.
Bates, Erwin F.; and Snyder, Michael D., 4,282,966, Cl. 198-382.000.

University of California, The Regents of the: *See*—
Goodman, Howard M.; Shine, John; and Horst, Peter, 4,283,489, Cl. 435-6.000.
Yang, An T.; and Hsia, Lih M., 4,282,778, Cl. 74-820.000.

University of Delaware: *See*—
Yolles, Seymour, 4,283,342, Cl. 260-345.100.

University of Illinois Foundation: *See*—
Buchanan, Relva C.; and Wittmer, Dale E., 4,283,228, Cl. 106-73.300.

University of Vermont: *See*—
Kuehne, Martin E., 4,283,536, Cl. 546-51.000.

UOP Inc.: *See*—
Pujado, Peter R., 4,283,568, Cl. 568-754.000.
Rosback, Donald H., deceased; and Gillespie, Janice M., executrix, 4,283,587, Cl. 585-828.000.

Upjohn Company, The: *See*—
Sih, John C., 4,283,350, Cl. 564-189.000.
Sih, John C., 4,283,351, Cl. 564-189.000.
Sih, John C., 4,283,552, Cl. 560-121.000.
Sih, John C., 4,283,558, Cl. 564-305.000.
Sih, John C., 4,283,575, Cl. 568-819.000.

Urban, Edward J.; and Vitcusky, William P., to Du Pont de Nemours, E. I., and Company. Insulating composition and articles made therefrom. 4,283,459, Cl. 428-379.000.

USV Pharmaceutical Corporation: *See*—
Shroff, James R.; and Desai, Rohit, 4,283,541, Cl. 546-336.000.

Vachee, Pierre: *See*—
Monrolin, Jean L.; and Vachee, Pierre, 4,283,789, Cl. 375-55.000.

Vadetec Corporation: *See*—
Kemper, Yves J., 4,282,947, Cl. 180-165.000.

Vajda, Tibor T. Endodontic-prosthetic stabilization system. 4,283,176, Cl. 433-173.000.

Vakhitov, Gadel G.: *See*—
Tabakov, Vladimir P.; Kornev, Boris P.; Buchenkov, Leonid N.; Gorbunov, Andrei T.; Kaschavtsev, Vladilen E.; Pilatovsky, Viktor P.; Gurov, Evgeny I.; Obrezkov, Alexandr I.; Vakhitov, Gadel G.; Bulgakov, Rishad T.; Maximov, Vladimir P.; Maxutov, Rafkhat A.; Shnirelman, Alexandr I.; Dobroskok, Boris E.; Asfandiyarov, Khalim A.; and Fatkullin, Airat K., deceased, 4,283,088, Cl. 299-2.000.

Valve Engineering Service Corp.: *See*—
Young, Richard E., 4,282,895, Cl. 137-281.000.

Van Mark Products Corporation: *See*—
Break, Douglas G., 4,282,735, Cl. 72-319.000.

Vandenbossche, Chris: *See*—
De Steur, Hubert; Vandenbossche, Chris; and Heyneman, Guido, 4,283,142, Cl. 356-319.000.

van der Hoeven, Philippus C.: *See*—
Foret, Roger; and van der Hoeven, Philippus C., 4,283,302, Cl. 252-102.000.

van der Lely, Cornelis. Torque converter. 4,282,774, Cl. 74-690.000.

Vanderpool, Clarence D.; and MacInnis, Martin B., to GTE Products Corporation. Process for preparing ammonium metatungstate. 4,283,257, Cl. 204-86.000.

Vanderpool, Clarence D.; and McClintic, Robert P., to GTE Products Corporation. Recovery of tungsten from heavy metal alloys. 4,283,258, Cl. 204-102.000.

Van Dest, Jean-Claude, to Massey-Ferguson Inc. Transmission having a two-speed planetary gear set. 4,282,775, Cl. 74-740.000.

van Esveld, Hendrik A.: *See*—
van Mal, Harmannus H.; van Esveld, Hendrik A.; van Wieringen, Johannes S.; and Buschow, Kurt H. J., 4,283,226, Cl. 75-175.500.

Van Herck, Andre J. B. M.; and Cornelissen, Gerardus A. P. M., to U.S. Philips Corporation. Gas discharge lamp having supporting tongue formed from electrode feedthrough. 4,283,652, Cl. 313-217.000.

Van Landingham, John V.: *See*—
McDonald, Charles J.; Van Landingham, John V.; and Givens, Steven P., 4,282,928, Cl. 166-274.000.

Van Lare, Earl J., to Eastman Kodak Company. Photographic compositions and elements spectrally sensitized with new methine dyes. 4,283,488, Cl. 430-588.000.

van Mal, Harmannus H.; van Esveld, Hendrik A.; van Wieringen, Johannes S.; and Buschow, Kurt H. J., to U.S. Philips Corporation. Method of preparing titanium iron-containing material for hydrogen storage. 4,283,226, Cl. 75-175.500.

van Raalte, John A., to RCA Corporation. Modular tube shadow mask support system. 4,283,654, Cl. 313-422.000.

Van Scott, Eugene J.; and Yu, Ruey J. Method for hair care. 4,283,386, Cl. 424-70.000.

van Wieringen, Johannes S.: *See*—
van Mal, Harmannus H.; van Esveld, Hendrik A.; van Wieringen, Johannes S.; and Buschow, Kurt H. J., 4,283,226, Cl. 75-175.500.

Varian Associates, Inc.: *See*—
Bassan, Benjamin; and Grandinetti, Michael A., 4,283,167, Cl. 418-13.000.
Faretra, Ronald A., 4,282,924, Cl. 165-80.00E.
Turner, Norman L., 4,283,631, Cl. 250-492.00B.

Varta Batterie Aktiengesellschaft: *See*—
Gutlich, Karl-Friedrich; Kappus, Wolfgang; Zweigardt, Herbert; and Eckardt, Rudolf, 4,283,467, Cl. 429-51.000.

Vasiliev, Vladimir I.: *See*—
Shalaev, Vitaly I.; Protasov, Alexandr K.; Vasiliev, Vladimir I.; and Ponomarev, Viktor I., 4,283,081, Cl. 292-113.000.

Vaughn Corporation: *See*—
Novello, Peter P., 4,282,878, Cl. 128-641.000.

Velenyi, Louis J.; and Dölhyj, Serge R., to Standard Oil Company, The. Alkylation of aromatic hydrocarbons in the presence of coated zeolite catalysts. 4,283,583, Cl. 585-467.000.

Venable, Thomas C. Telescope guiding system. 4,283,112, Cl. 350-80.000.

Verbatim Corporation: *See*—
Binkowski, Constance J., 4,282,973, Cl. 206-444.000.

Vernieres, Jean-Claude: *See*—
Pigerol, Charles; Vernieres, Jean-Claude; Eymard, Pierre; Simiand, Jacques; Broll, Madeleine; and Lacolle, Jean-Yves, 4,283,420, Cl. 424-317.000.

Vernon, Lonnie W.: *See*—
Maa, Peter S.; and Vernon, Lonnie W., 4,283,267, Cl. 208-8.0LE.

Vertut, Jean, to Commissariat a l'Energie Atomique. Motorized manipulator of the cable transmission type having an increased field of action. 4,283,165, Cl. 414-733.000.

Victor Company of Japan, Ltd.: *See*—
Miyoshi, Tadayoshi; and Kashiwagi, Shigeru, 4,283,663, Cl. 315-400.000.

Vidakovits, Lajos J.; and Watine, Didier J. M., to Raychem Pontoise S.A. Connector and connection method. 4,283,596, Cl. 174-84.00R.

Vidic, Hans-Jorg, to Schering Aktiengesellschaft. Process for the preparation of heparin. 4,283,530, Cl. 536-21.000.

Villari, Frank K.: *See*—
Steigerwald, Carl J.; and Villari, Frank K., 4,282,610, Cl. 2-414.000.

Vinals, Joaquin F.: *See*—
Sprecker, Mark A.; Schmitt, Frederick L.; Vock, Manfred H.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,283,576, Cl. 568-826.000.

Violante, Anthony E. Convertible invalid bed. 4,282,613, Cl. 5-90.000.

Virginia Chemicals Inc.: *See*—
Ellis, Leonard C., 4,283,303, Cl. 252-188.000.

Vis, Jan: *See*—
Zeilstra, Jacobus J.; de Klein, Willem J.; Bik, Joannes D.; and Vis, Jan, 4,283,314, Cl. 260-23.0AR.

VISI Technology Research Association: *See*—
Higashinakagawa, Iwao; Sima, Syohei; and Moriya, Takahiko, 4,283,439, Cl. 427-89.000.

Vitcusky, William P.: *See*—
Urban, Edward J.; and Vitcusky, William P., 4,283,459, Cl. 428-379.000.

Vock, Manfred H.: *See*—
Sprecker, Mark A.; Schmitt, Frederick L.; Vock, Manfred H.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,283,576, Cl. 568-826.000.

Voege, Herbert: *See*—
von Bittera, Miklos; Voege, Herbert; and Bauditz, Reinwalt, 4,283,400, Cl. 424-250.000.

Vogel, Christian; and Aebi, Rudolf, to Ciba-Geigy Corporation. Plant growth regulating agent. 4,283,221, Cl. 71-118.000.

Voirin, Robert; Mathieu, Pierre; and Chambu, Claude, to Societe Nationale Elf Aquitaine (Production). Process and installation for desulphurizing gases containing SO_2. 4,283,380, Cl. 423-574.00R.

Voith Turbo GmbH & Co. KG: *See*—
Sauka, Klaus; and Muschelknautz, Hortz, deceased, 4,283,092, Cl. 303-3.000.

Volkswagenwerk Aktiengesellschaft: *See*—
Ashauer, Karl; and Blumenstein, Fritz, 4,282,765, Cl. 74-417.000.

Volz, Hartwig: *See*—
Grodde, Karl-Heinz; and Volz, Hartwig, 4,282,930, Cl. 166-305.00R.

von Beckmann, Helmuth, to Canron Corp. Railroad tamping machine. 4,282,815, Cl. 104-12.000.

von Bittera, Miklos; Voege, Herbert; and Bauditz, Reinwalt, to Bayer Aktiengesellschaft. Medicated animal feed based on liver meal. 4,283,400, Cl. 424-250.000.

von Gutfeld, Robert J.: *See*—
Melcher, Robert L.; Romankiw, Lubomyr T.; and von Gutfeld, Robert J., 4,283,259, Cl. 204-129.300.

von Stein, Walter; and Fetzer, Gunter, to Erwin Sick Gesellschaft mit beschrankter Haftung Optik-Elektronik. Reading apparatus for reading colored markings applied to objects. 4,283,623, Cl. 235-465.000.

Voorthuyzen, Peter. Counter pressure system for stringed instruments. 4,282,792, Cl. 84-295.000.

Voronkov, Mikhail G.; Platonova, Ada T.; Simbirtsev, Nikolai L.; Dyakov, Valery M.; Dyban, Andrei P.; and Kuznetsov, Igor G. Preparation for raising the fertility of animals. 4,283,419, Cl. 424-316.000.

Vrillon, Bernard, to Commissariat a l'Energie Atomique. Device for stopping a leak in a straight portion of a heat-exchanger tube. 4,283,615, Cl. 219-66.000.

W. L. Gore & Associates, Inc.: *See*—
Bowman, Jeffery B., 4,283,448, Cl. 428-36.000.

W. R. Grace & Co.: *See*—
Fowler, Stephen L., 4,283,630, Cl. 250-492.00B.
Peekna, Andres, 4,282,998, Cl. 226-97.000.

Wachi, Masatada, to Nippon Gakki Seizo Kabushiki Kaisha. Electronic musical instrument. 4,282,790, Cl. 84-1.210.

Wacker-Chemitronic Gesellschaft fur Elektronik-Grundstoffe mbH: *See*—
Regler, Dieter; Meissner, Bruno; and Moritz, Alfred, 4,283,242, Cl. 156-154.000.

Wagner, Hans: *See*—
Polenz, Joachim; and Wagner, Hans, 4,283,253, Cl. 201-30.000.

Wagner, Karl: *See*—
Engelsmann, Dieter; Lermann, Peter; Nicko, Reinhard; Schultes, Herbert; and Wagner, Karl, 4,283,132, Cl. 354-202.000.

Wagner, Kuno; Niggemann, Johannes; Findeisen, Kurt; and Scheinpflug, Hans, to Bayer Aktiengesellschaft. Agrochemical agents and their use. 4,283,219, Cl. 71-28.000.

Wagner, Rudolf, to Rems-Werk Christian Foll und Sohne GmbH & Co. Die for cutting screw-threads. 4,282,618, Cl. 10-111.000.

Wagner, Wolfgang: *See*—
Reiff, Karl; Wagner, Wolfgang; and Masur, Klaus, 4,282,654, Cl. 33-1.00M.

Wainio, Ronald A.: *See*—
Date, Kazuo H.; and Wainio, Ronald A., 4,283,610, Cl. 200-146.00R.

Wajima, Motoyo: *See*—
Takahashi, Akio; Itoh, Yutaka; Wajima, Motoyo; Morishita, Hirosada; and Tsukanishi, Kenji, 4,283,522, Cl. 528-170.000.

Wakefield, Gene F.: *See*—
Roques, Rodney A.; and Wakefield, Gene F., 4,283,247, Cl. 156-601.000.

Walborn, Richard M., to Norlin Industries, Inc. Electronic musical instrument simultaneously operable in monophonic and polyphonic modes. 4,282,787, Cl. 84-1.010.

Wald Manufacturing Co., Inc.: *See*—
Humlong, Robert F., 4,282,993, Cl. 224-31.000.

Walker, Leon: *See*—
Parker, Herman; Walker, Leon; and Berry, Howard S., 4,283,053, Cl. 273-86.00D.

Wall, Clarence W.: *See*—
Tapp, Robert H.; and Wall, Clarence W., 4,282,728, Cl. 66-182.000.

Walsh, James L.: *See*—
Konian, Richard R.; and Walsh, James L., 4,283,640, Cl. 307-270.000.

Walt Disney Productions: *See*—
Snyder, R. David; Iwerks, Donald W.; Otto, Robert R.; Richardson, Lee R.; and Inglish, David S., 4,283,766, Cl. 364-525.000.

Walton, Theodore R., to United States of America, Navy. Acetylene-terminated dianil monomer and the polymer therefrom. 4,283,557, Cl. 564-272.000.

Walz, Kurt: *See*—
Becker, Gert; Oesch, Johann U.; Poeselt, Horst; Tomlinson, Alan D.; and Walz, Kurt, 4,283,299, Cl. 252-90.000.

Wamy Corporation: *See*—
Abe, Yoichi, 4,282,677, Cl. 46-118.000.

Wandrack, Joseph, to United States of America, Navy. Fiber optic light valve. 4,283,114, Cl. 350-96.200.

Warnicke, Allen E. Archery bow with arrow guide apparatus. 4,282,850, Cl. 124-24.00R.

Warren, John B.: *See*—
Davies, William D.; Skelhorne, Graham G.; and Warren, John B., 4,283,480, Cl. 430-270.000.

Watanabe, Kazuo; Makabe, Hachiro; Kume, Toshiaki; Kakinuma, Toshihide; and Takenoya, Hideaki, to Janome Sewing Machine Co., Ltd. Electronic control system for sewing machines. 4,282,821, Cl. 112-158.00E.

Watanabe, Tomoyoshi: *See*—
Hanazono, Masami; Watanabe, Tomoyoshi; Nakai, Toshio; Kuzuya, Susumu; Asai, Akira; Iwase, Takayuki; Nakamura, Kazuo; and Onoda, Hiroshi, 4,283,150, Cl. 400-666.000.

Watanabe, Tsuyoshi: *See*—
Fujii, Setsuro; Watanabe, Tsuyoshi; Shiota, Masashi; Okumoto, Itsuo; and Kayama, Naohiro, 4,283,418, Cl. 424-310.000.

Watase, Kazumi: *See*—
Hirai, Hiroyuki; Matsushita, Sachio; Tsuyuki, Isao; and Watase, Kazumi, 4,283,266, Cl. 204-263.000.

Waters Associates, Inc.: *See*—
Carson, William W., 4,283,140, Cl. 356-130.000.

Waters Instruments, Inc.: *See*—
Burton, Thomas A., 4,283,099, Cl. 312-351.000.

Watine, Didier J. M.: *See*—
Vidakovits, Lajos J.; and Watine, Didier J. M., 4,283,596, Cl. 174-84.00R.

Watkins, Kenneth R.; and Bolind, Michael L., to United States Gypsum Company. Free-flowing granular urea nutrient supplements. 4,283,423, Cl. 426-69.000.

Watteredge-Uniflex, Inc.: *See*—
Halter, Matthew R., 4,283,678, Cl. 324-140.00R.

Wayne Gossard, Inc.: *See*—
Wilkins, Donald L., 4,282,726, Cl. 66-172.00E.

Weatherly Foundry & Manufacturing Co.: *See*—
Smith, William J., 4,283,015, Cl. 241-5.000.

Webber, J. R.: *See*—
Hay, Lloyd F.; Rica, Albert F.; and Webber, J. R., 4,282,925, Cl. 165-94.000.

Weber, Andreas; and Schaefer, Manfred, to Daimler-Benz Aktiengesellschaft. Passenger motor vehicle with a tank arranged behind the rear seats. 4,283,067, Cl. 280-5.00A.

Webster, Milo E.: *See*—
Cormier, Alan D.; Webster, Milo E.; Czaban, John D.; Silverman, Neil D.; and Noble, Lynn W., 4,283,262, Cl. 204-195.00M.

Weetman, David: *See*—
Howard, Peter; and Weetman, David, 4,283,256, Cl. 204-1.00T.

Weigel, Horst: *See*—
Melcher, Gerhard; and Weigel, Horst, 4,283,045, Cl. 266-162.000.

Weimer, Dean R.; and Starks, Charles M., to Conoco, Inc. Chemicals for termination of polyvinylchloride polymerizations. 4,283,514, Cl. 526-84.000.

Weis, John A., to Jersey Nuclear-Avco Isotopes, Inc. Beam combiner. 4,283,116, Cl. 350-174.000.

Weiss, Richard: *See*—
Spielau, Paul; Putz, Peter; Weiss, Richard; and Schraube, Hansfritz, deceased, 4,282,697, Cl. 52-746.000.

Wenghoefer, Johann; Messier, Dennis G.; and Thompson, James E., to American Hoechst Corporation. Process for coloring fiber materials with azo dyestuff containing $-SO_2CH_2CH_2OSO_3H$ and $-N(CH_2CH_2OSO_3H)_2$ groups. 4,283,196, Cl. 8-531.000.

Werner, Franz, to U.S. Philips Corporation. Magnetic tape cassette. 4,283,026, Cl. 242-199.000.

Wessanen Nederland B.V.: *See*—
Best, Ijsbrand, 4,283,232, Cl. 127-71.000.

West, Charles R.; and Hong, Chung I., to Research Corporation. Cytotoxic nucleoside-corticosteroid phosphodiesters. 4,283,394, Cl. 424-182.000.

Western Electric Co., Inc.: *See*—
Bankes, Kristen E.; Johnson, Anderson F., Jr.; Large, Donald M.; and Reinhard, Fred J., 4,282,908, Cl. 140-147.000.
Bauer, William A.; Frohlich, Charles R., Jr.; Griffin, Raymond H.; and Henderson, Joseph G., 4,283,020, Cl. 242-25.00R.
Dick, Bernard M., 4,282,744, Cl. 73-49.300.
Griffin, Rodney B.; and Swenson, William A., 4,283,100, Cl. 339-19.000.
Perkins, Carl C., Jr., 4,283,747, Cl. 361-117.000.
Petree, Edwyn H., 4,282,644, Cl. 29-566.300.
Zelins, Ronald P., 4,282,951, Cl. 182-221.000.

Westinghouse Electric Corp.: *See*—
Adam, John D., 4,283,692, Cl. 333-17.00L.
Hummert, George T.; Garrett, Randall M.; and Schultz, Roy D., 4,283,651, Cl. 310-223.000.
Johnston, Paul M., 4,283,772, Cl. 364-900.000.
Livera, Phillip A., 4,283,214, Cl. 65-70.000.
Molnar, Albert J.; Wolff, Fred H.; and Ramey, Donald G., 4,282,756, Cl. 73-650.000.
Yannone, Robert A.; and Reed, Terry J., 4,283,634, Cl. 290-40.00R.

Westley, John: *See*—
Liu, Chao-Min; and Westley, John, 4,283,493, Cl. 435-119.000.

Westvaco Corporation: *See*—
Miller, Douglas C.; and Wolfe, Terry W., 4,283,168, Cl. 425-465.000.

Westworld Enterprises: *See*—
Gallagher, Donald A., 4,283,084, Cl. 296-78.100.

Wheeler, Thomas N., to Union Carbide Corporation. Method of preparing 2-aryl-3-cyclopentanedione compounds. 4,283,348, Cl. 260-465.00D.

Whirlpool Corporation: *See*—
Brightman, Ben W., 4,283,607, Cl. 200-38.00R.

Whisenhunt, Kelsie C. Motorized attachment for a fishing reel. 4,283,025, Cl. 242-84.10A.

White, William L., to Joyce, Patrick H., a part interest. Sample holder/-dispenser. 4,283,000, Cl. 229-17.00B.

Wichman, Paul E.: *See—*
Bramow, Scott B.; Laakaniemi, Richard N.; and Wichman, Paul E., 4,283,007, Cl. 236-44.00C.

Wicklmayr, Matthias: *See—*
Dietze, Gunther; and Wicklmayr, Matthias, 4,283,392, Cl. 424-177.000.

Widmer, Erich: *See—*
Broger, Emil A.; Crameri, Yvo; Leuenberger, Hans G. W.; Widmer, Erich; and Zell, Reinhard, 4,283,559, Cl. 568-11.000.

Wieber, Karl; Janke, Heinrich; Kraft, Winfried; and Lisfeld, Robert, to Ernst Leitz Wetzlar GmbH. Microscope stand with protected turret. 4,283,111, Cl. 350-39.000.

Wilke, William H., to Boeing Company, The. Adjustable wedge fitting for sharing the thrust load of a jet engine. 4,283,028, Cl. 244-54.000.

Wilkes, John B., to Chevron Research Company. Hydrogenation process. 4,283,581, Cl. 568-864.000.

Wilkesmann, Helmut, to Krauss-Maffei Aktiengesellschaft. Centrifuge with product accelerator. 4,283,286, Cl. 210-365.000.

Wilkins, Donald L., to Wayne Gossard, Inc. Anti-slip footlet sock. 4,282,726, Cl. 66-172.00E.

Willard, Stephen F.: *See—*
Hallenbeck, Norman P.; and Willard, Stephen F., 4,282,739, Cl. 72-449.000.

Wm. D. Peterson & Associates: *See—*
Peterson, William D.; and Lytle, John M., 4,282,835, Cl. 123-1.00A.

William H. Rorer, Inc.: *See—*
Diamond, Julius; and Zalipsky, Jerome J., 4,283,555, Cl. 564-53.000.

Williams, Brian; and Kratsas, Richard. Quick opening window for trailers and mobile homes. 4,282,685, Cl. 49-141.000.

Williams, Burch I.: *See—*
Hulber, Clarence E., Jr., 4,282,988, Cl. 222-184.000.

Williams, David E.: *See—*
Lucero, Andres R.; Williams, David E.; and Nelson, James L., 4,283,709, Cl. 340-147.00R.

Williams, David G.; and Harris, Paul A., to Lucas Industries Limited. Liquid level sensing circuit. 4,283,719, Cl. 340-620.000.

Williams, David M.: *See—*
Grubb, Lawrence B.; Simpson, Danny E.; Hoffman, Louis S.; and Williams, David M., 4,282,679, Cl. 46-193.000.

Williams, Donald F.; and Phy, Charles L. Method for forming paper boxes and the like. 4,283,190, Cl. 493-131.000.

Williamson, Alexander S.: *See—*
Prats, Michael; and Williamson, Alexander S., 4,282,750, Cl. 73-155.000.

Willis, David L.: *See—*
Catanzaro, James R.; Meyer, August R.; and Willis, David L., 4,283,062, Cl. 277-12.000.

Wilson, David G.: *See—*
Forrestall, Richard J.; and Wilson, David G., 4,283,070, Cl. 280-274.000.

Wilson, John E.; and Hengen, Edward J., to Deere & Company. Feeder house for a crop harvester. 4,282,703, Cl. 56-14.600.

Wilson, Ronald A., to Microwave Development Laboratories. Interlocked waveguide assembly. 4,282,649, Cl. 29-600.000.

Winchell, David A., to Baxter Travenol Laboratories, Inc. Plastic hanger for containers. 4,282,980, Cl. 215-100.00A.

Windisch, Anthony J. Electronic amusement apparatus and circuit. 4,283,052, Cl. 273-85.00G.

Winfred M. Berg, Inc.: *See—*
Berg, Winfred M., 4,283,184, Cl. 474-203.000.

Wingerter, Conrad C.; and Bassett, J. Thomas, to Marq Packaging Systems, Inc. H-section carton forming machine. 4,283,188, Cl. 493-89.000.

Winter, Hermann: *See—*
Schenk, Harald; Winter, Hermann; and Spietschka, Walter, 4,283,426, Cl. 426-105.000.

Winter, Roland A. E.: *See—*
Dexter, Martin; and Winter, Roland A. E., 4,283,327, Cl. 260-45.8NT.

Winters, William C.; Chang, Hsien-Hsin; Anderson, George R.; Easter, Ross A.; and Sholl, Jeffrey J., to Pillsbury Company, The. Microwave heating package, method and susceptor composition. 4,283,427, Cl. 426-107.000.

Witek, Stanislaw; Grobelny, Damian; Ptaszkowska, Janina; Bielecki, Andrzej; Bakuniak, Edmund; Fulde, Stefan; and Gorska-Poczopko, Jadwiga. Parasticide. 4,283,399, Cl. 424-248.400.

Witt, Walter: *See—*
Browne, Laurence S.; Braun, Frank D.; and Witt, Walter, 4,283,173, Cl. 433-34.000.

Wittmer, Dale E.: *See—*
Buchanan, Relva C.; and Wittmer, Dale E., 4,283,228, Cl. 106-73.300.

Wize, Gary A., to General Motors Corporation. Passive occupant shoulder belt. 4,283,075, Cl. 280-804.000.

Wohlfeil, Gerhard, to Jagenberg-Werke AG. Apparatus for regulation of the coating thickness in the coating of continuous webs of material. 4,282,826, Cl. 118-118.000.

Wohlman, Alan: *See—*
Fan, Lucy L.; Wohlman, Alan; and Longan, Bobby J., 4,283,437, Cl. 426-637.000.

Wolf, Elmar: *See—*
Disteldorf, Josef; Hubel, Werner; and Wolf, Elmar, 4,283,535, Cl. 544-193.000.

Wolfe, Terry W.: *See—*
Miller, Douglas C.; and Wolfe, Terry W., 4,283,168, Cl. 425-465.000.

Wolff, Fred H.: *See—*
Molnar, Albert J.; Wolff, Fred H.; and Ramey, Donald G., 4,282,756, Cl. 73-650.000.

Wood, John C.; and Thompson, Charles W., to Olin Corporation. Bolt-on fore stock. ,282,671, Cl. 42-75.00A.

Wooden, Bruce J.; an Edelman, Seymour, to United States of America, Navy. Piezoelectric polymer antifouling coating. 4,283,461, Cl. 428-422.000.

Woolston, A. Brent; and Evans, Donald J., to Molins Machine Company, Inc. Stacker conveyor run separation control. 4,283,185, Cl. 493-15.000.

Wootten, Richard M.; and Herron, Jake, Jr., to United States of America, Army. Individual lead pull test for beam leaded devices. 4,282,758, Cl. 73-827.000.

Wostbrock, Gert: *See—*
Hogenkamp, Wilhelm; and Wostbrock, Gert, 4,282,964, Cl. 198-358.000.

Wright, Roy F., to Phillips Petroleum Co. Polyphenylene oxide blending. 4,283,503, Cl. 525-89.000.

Wright, William B., Jr.: *See—*
Tomcufcik, Andrew S.; Wright, William B., Jr.; and Marsico, Joseph W., Jr., 4,283,334, Cl. 260-245.500.

Wuerzer, Bruno: *See—*
Schirmer, Ulrich; Becker, Rainer; and Wuerzer, Bruno, 4,283,547, Cl. 548-307.000.

Xerox Corporation: *See—*
Andrews, Ronald A., 4,282,827, Cl. 118-648.000.
Curry, Donald J.; Knight, Gordon R.; and Kowalski, Daniel C., 4,283,777, Cl. 369-32.000.
Daughton, John W.; Gillett, Kenneth; and Nelson, Frank M., 4,283,773, Cl. 364-900.000.

Yajima, Seishi; Okamura, Kiyohito; and Hasegawa, Yoshio, to Research Institute for The Foundation: Special Inorganic Materials, The. Method of producing silicon carbide fibers. 4,283,376, Cl. 423-345.000.

Yamada, Kenji; Takata, Akira; Ii, Akira; and Ohiwa, Katsuhiko, to Nippondenso Co., Ltd.; and Toyota Jidosha Kogyo Kabushiki Kaisha. Internal combustion engine with altitude compensation device. 4,282,840, Cl. 123-412.000.

Yamada, Kenji: *See—*
Nakajima, Fumio; Machida, Takayasu; Yamada, Kenji; and Kanno, Fumio, 4,283,783, Cl. 368-76.000.

Yamada, Masashi: *See—*
Ohnuki, Mitsuo; and Yamada, Masashi, 4,283,131, Cl. 354-195.000.

Yamada, Yujiro: *See—*
Ezaki, Norio; Miyadoh, Shinji; Ogawa, Yasuaki; Hisamatsu, Takashi; Fukuyashu, Harumi; and Yamada, Yujiro, 4,283,389, Cl. 424-116.000.

Yamaga, Eiichi; Iio, Junji; Takeda, Toshio; Nakada, Akira; and Imamura, Akio, to Nippon Gakki Seizo Kabushiki Kaisha. Electronic musical instrument with automatic chord performance device. 4,282,788, Cl. 84-1.030.

Yamaguchi, Noboru: *See—*
Kita, Yuzo; Yamaguchi, Noboru; Shibukawa, Masaru; and Minorikawa, Kazuo, 4,283,760, Cl. 364-200.000.

Yamamoto, Ray. Seed plate. 4,282,985, Cl. 221-254.000.

Yamamura, Masahiro: *See—*
Kominami, Yasuo; Yamamura, Masahiro; Mizumoto, Katsuji; and Hanada, Toshihide, 4,283,674, Cl. 323-313.000.

Yamanouchi Pharmaceutical Co., Ltd.: *See—*
Hirata, Yasufumi; Yanagisawa, Isao; Ishii, Yoshio; Tsukamoto, Shinichi; Ito, Noriki; Isomura, Yasuo; and Takeda, Masaaki, 4,283,408, Cl. 424-270.000.

Yamasaki, Koyu; and Iino, Yousuke, to Mitsubishi Jukogyo Kabushiki Kaisha. Method of making metal gaskets. 4,282,643, Cl. 29-527.200.

Yamato, Motoyuki; and Natsuume, Tadao, to Nippon Zeon Co. Ltd. Process for producing liquid dibasic acid anhydrides. 4,283,343, Cl. 260-346.300.

Yamauchi, Shin: *See—*
Ohara, Takashi; Ono, Tetsuji; Yonehara, Kiyoshi; and Yamauchi, Shin, 4,283,308, Cl. 252-435.000.

Yamauchi, Takashi; and Nanbu, Hirofumi, to Kureha Kagaku Kogyo Kabushiki Kaisha. Method for the production of α-tetralone. 4,283,352, Cl. 568-311.000.

Yamazaki, Haruo; Matsumoto, Masaharu; and Kimura, Shigeru, to Nifco Inc.; and Ohi Seisakusho Co., Ltd. Apparatus for connection of operating rod. 4,283,155, Cl. 403-163.000.

Yanagisawa, Isao: *See—*
Hirata, Yasufumi; Yanagisawa, Isao; Ishii, Yoshio; Tsukamoto, Shinichi; Ito, Noriki; Isomura, Yasuo; and Takeda, Masaaki, 4,283,408, Cl. 424-270.000.

Yang, An T.; and Hsia, Lih M., to University of California, The Regents of the. Multi-stage Geneva mechanism. 4,282,778, Cl. 74-820.000.

Yannone, Robert A.; and Reed, Terry J., to Westinghouse Electric Corp. System and method for monitoring and controlling operation of industrial gas turbine apparatus and gas turbine electric power plants preferably with a digital computer control system. 4,283,634, Cl. 290-40.00R.

Yates, Barrie J.; and Hurst, Ronald C., to Cabot Corporation. Production of high surface area carbon biacks. 4,283,378, Cl. 423-456.000.

Yerushalmy, Moshe, to Scitec Corporation Ltd. Spirometers. 4,282,883, Cl. 128-726.000.

Yokohama Rubber Co., Ltd., The: *See—*
Tomoda, Hajime; and Takahashi, Ken, 4,282,918, Cl. 152-353.00C.

Yokooku, Katsuhiko: *See*—
Harada, Setsuo; and Yokooku, Katsuhiko, 4,283,368, Cl. 422-181.000.

Yokosuka Boat Kabushiki Kaisha: *See*—
Minamidate, Makoto, 4,282,938, Cl. 173-162.00H.

Yolles, Seymour, to University of Delaware. Anticancer agents and methods of manufacture. 4,283,342, Cl. 260-345.100.

Yoneda, Kenji: *See*—
Takagi, Yasuo; Onoda, Michio; Katsumata, Masaaki; and Yoneda, Kenji, 4,282,841, Cl. 123-425.000.

Yonehara, Kiyoshi: *See*—
Ohara, Takashi; Ono, Tetsuji; Yonehara, Kiyoshi; and Yamauchi, Shin, 4,283,308, Cl. 252-435.000.

Yonekubo, Ken, to Olympus Optical Co., Ltd. Optical system for discussion-microscope. 4,283,110, Cl. 350-33.000.

Yoshida, Akio: *See*—
Matsunami, Muneharu; Saito, Toshio; Yoshida, Akio; and Inokuchi, Nobuyuki, 4,283,076, Cl. 280-806.000.

Yoshida Kogyo K.K.: *See*—
Uehara, Takeo; and Hori, Haruo, 4,282,631, Cl. 16-102.000.

Yoshida, Masatoshi: *See*—
Konii, Susumu; Sase, Shigeo; Yoshida, Masatoshi; Kuroda, Shoei; and Sumi, Takeshi, 4,283,319, Cl. 260-29.300.

Yoshida, Yoshinori; and Oka, Hiroshi, to Japan Synthetic Rubber Co., Ltd. Process for producing diol. 4,283,579, Cl. 568-857.000.

Yoshimura, Masahito; Hoshiyama, Satoshi; Takamatsu, Hideki; Kobayashi, Hiroshi; and Takigawa, Shinichiro, to Nissan Chemical Industries, Ltd. Process for dimerizing or codimerizing lower monoolefin. 4,283,586, Cl. 585-512.000.

Yoshinao, Iwamoto: *See*—
Kazuomi, Yamamura; Takasuke, Fukui; Yoshinao, Iwamoto; Yuichi, Shirasaki; Masayuki, Fujise; Hikoaki, Sugimoto; Kikuo, Shirai; and Minoru, Yoshida, 4,283,681, Cl. 324-326.000.

Yoshioka, Mitsuru; Hamashima, Yoshio; and Nagata, Wataru, to Shionogi & Co., Ltd. α-[4-Oxoazetidin-1-yl]-acetic acid compounds useful as intermediates in preparing 1-oxadethiacephalosporins. 4,283,333, Cl. 260-239.00A.

Young, Alastair J.; and Burke, John P., to Automotive Products Limited. Fluid pressure actuator. 4,282,800, Cl. 92-37.000.

Young, Chi C.; and DeMaria, Francesco, to American Cyanamid Company. Process for melt-spinning acrylonitrile polymer fiber using vertically disposed compression zone. 4,283,365, Cl. 264-206.000.

Young, Lewis B., to Mobil Oil Corporation. Long-chain alkylphenols. 4,283,573, Cl. 568-794.000.

Young, Prussin, MGK, J.V.: *See*—
Young, Robert W.; Prussin, Samuel; and Gaylord, Norman G., 4,283,387, Cl. 424-78.000.

Young, Richard E., to Valve Engineering Service Corp. Freeze-proof, pollution free valve. 4,282,895, Cl. 137-281.000.

Young, Robert W.; Prussin, Samuel; and Gaylord, Norman G., to Young, Prussin, MGK, J.V. Adherent controlled release pesticide. 4,283,387, Cl. 424-78.000.

Yu, Kenneth K.; Bohr, Mark T.; and Seidenfeld, Mark B., to Intel Corporation. CMOS process. 4,282,648, Cl. 29-571.000.

Yu, Ruey J.: *See*—
Van Scott, Eugene J.; and Yu, Ruey J., 4,283,386, Cl. 424-70.000.

Yuan, Mary W.; and Birney, Sharon R., to General Foods Corporation. Process for preparing low fat content potato chips and product thereof. 4,283,425, Cl. 426-102.000.

Yuasa Battery Co. Ltd.: *See*—
Machi, Sueo; Ishigaki, Isao; Sugo, Takanobu; Murata, Kazuo; Tanso, Shiro; and Senoo, Keizi, 4,283,442, Cl. 427-171.000.

Yuichi, Shirasaki: *See*—
Kazuomi, Yamamura; Takasuke, Fukui; Yoshinao, Iwamoto; Yuichi, Shirasaki; Masayuki, Fujise; Hikoaki, Sugimoto; Kikuo, Shirai; and Minoru, Yoshida, 4,283,681, Cl. 324-326.000.

Zalipsky, Jerome J.: *See*—
Diamond, Julius; and Zalipsky, Jerome J., 4,283,555, Cl. 564-53.000.

Zambon, Antonio. Bridge crane for the emplacement of elongate prefabricated members of structures spanning a multiplicity of spaced-apart supports. 4,282,978, Cl. 212-205.000.

Zangenfeind, Helmut, to AGFA-Gevaert Aktiengesellschaft. Apparatus for removing exposed films and backing strips from cassettes. 4,282,997, Cl. 226-91.000.

Zappa, Oswald L.: *See*—
Daugherty, Jack D.; Kantrowitz, Arthur R.; Sutton, George W.; and Zappa, Oswald L., 4,283,686, Cl. 331-94.50G.

Zarchy, Andrew S., to General Electric Company. Device and method for detecting alkali metals. 4,282,741, Cl. 73-23.000.

Zaruba, John V., to Marvin Glass & Associates. Manually operated frequency changer on wheeled toy with LED's. 4,282,680, Cl. 46-227.000.

Zebra Co., Ltd.: *See*—
Sekiguchi, Kazuhiko, 4,283,151, Cl. 401-33.000.

Zeilstra, Jacobus J.; de Klein, Willem J.; Bik, Joannes D.; and Vis, Jan, to Akzona Incorporated. Resin composition having improved internal and external lubricating properties employing branched chain high molecular weight ester derivatives of monocarboxylic acids. 4,283,314, Cl. 260-23.0AR.

Zelins, Ronald P., to Western Electric Company, Inc. Gaff guard for linemen's climbers. 4,282,951, Cl. 182-221.000.

Zell, Reinhard: *See*—
Broger, Emil A.; Crameri, Yvo; Leuenberger, Hans G. W.; Widmer, Erich; and Zell, Reinhard, 4,283,559, Cl. 568-11.000.

Zenker, Richard L., to Kelsey-Hayes Company. Load sensing transducer. 4,282,762, Cl. 73-862.520.

Zidulka, Arnold, to Montreal General Hospital Research Inst. Apparatus for oxygen treatment. 4,282,869, Cl. 128-200.280.

Ziegler, Bodo: *See*—
Maurer, Helmut; Muller, Klaus; Rieger, Franz; Linder, Ernst; Dietz, Hermann; Friese, Karl-Hermann; and Ziegler, Bodo, 4,283,261, Cl. 204-195.00S.

Ziklag Reinforced Plastics, Ltd.: *See*—
Abrahami, Shoshana, 4,283,451, Cl. 428-182.000.

Zimmerman, Abraham A., to Exxon Research & Engineering Co. Petroleum fuel composition containing an anti-haze additive. 4,283,203, Cl. 44-62.000.

Zimmerman, George M., to Bon Aqua. Water filter. 4,283,283, Cl. 210-282.000.

Zimmermann, Guenter. Liquid filling machine. 4,282,698, Cl. 53-282.000.

Zindler, Hugh A. Drive transmission. 4,282,958, Cl. 192-17.00R.

Zipser, Randall E., to Sperry Corporation. Material moving apparatus for a bale wagon. 4,282,969, Cl. 198-747.000.

Zitzelsberger, Helmut, to Siemens Aktiengesellschaft. Automatic guidance system for radiation-responsive systems. 4,283,588, Cl. 136-246.000.

Zortea, Michel: *See*—
Boudenant, Pierre; Scholl, Heinz; and Zortea, Michel, 4,283,363, Cl. 264-171.000.

Zucco, Louis, to Bourgela, Roger. Rotary trench digging machine. 4,282,662, Cl. 37-94.000.

Zuhone, Daniel M.; and Coleman, Mark S. Quick acting coupler for cultivator attachment. 4,282,936, Cl. 172-512.000.

Zweifel, Hans; and Bellus, Daniel, to Ciba-Geigy Corporation. Photocrosslinkable polymers with side tricyclic imidyl groups. 4,283,509, Cl. 525-375.000.

Zweigardt, Herbert: *See*—
Gutlich, Karl-Friedrich; Kappus, Wolfgang; Zweigardt, Herbert; and Eckardt, Rudolf, 4,283,467, Cl. 429-51.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 11TH DAY OF AUGUST, 1981

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Adomeit, Heinz-Dieter. Safety belt clamping device. Re. 30,707, Cl. 242-107.200.

Bustos, Rafael T., to Leggett & Platt, Incorporated. Display rack with improved shelf assembly. Re. 30,706, Cl. 211-49.00D.

Canon Kabushiki Kaisha: *See*—
Momiyama, Kikuo, Re. 30,708, Cl. 350-465.000.

Cherry, Thomas A.: *See*—
Keller, Alex J.; Dellinger, Keith S.; Ray, James L.; Cherry, Thomas A.; and Fechner, Erhard A., Re. 30,702, Cl. 57-268.000.

Dellinger, Keith S.: *See*—
Keller, Alex J.; Dellinger, Keith S.; Ray, James L.; Cherry, Thomas A.; and Fechner, Erhard A., Re. 30,702, Cl. 57-268.000.

Fechner, Erhard A.: *See*—
Keller, Alex J.; Dellinger, Keith S.; Ray, James L.; Cherry, Thomas A.; and Fechner, Erhard A., Re. 30,702, Cl. 57-268.000.

Hines, Charles E., to Outboard Marine Corporation. Soil aerating device. Re. 30,705, Cl. 172-22.000.

Hughes, Lloyd M., to Lloyd M. Hughes Enterprises, Inc. Self-lighting cigarette having a protective cap. Re. 30,704, Cl. 131-351.000.

JoPaul Industries, Inc.: *See*—
Paulson, John K.; and Steffan, Walter J., Re. 30,703, Cl. 124-1.000.

Keller, Alex J.; Dellinger, Keith S.; Ray, James L.; Cherry, Thomas A.; and Fechner, Erhard A. Doffer with pneumatic control system. Re. 30,702, Cl. 57-268.000.

Leggett & Platt, Incorporated: *See*—
Bustos, Rafael T., Re. 30,706, Cl. 211-49.00D.

Lloyd M. Hughes Enterprises, Inc.: *See*—
Hughes, Lloyd M., Re. 30,704, Cl. 131-351.000.

Miller, George H.: *See*—
Williams, Ben; and Miller, George H., Re. 30,701, Cl. 24-90.00R.

Momiyama, Kikuo, to Canon Kabushiki Kaisha. Telephoto objective. Re. 30,708, Cl. 350-465.000.

Outboard Marine Corporation: *See*—
Hines, Charles E., Re. 30,705, Cl. 172-22.000.

Paulson, John K.; and Steffan, Walter J., to JoPaul Industries, Inc. Ball throwing device with rotary wheel, and pad means for compressing a ball against the wheel. Re. 30,703, Cl. 124-1.000.

Ray, James L.: *See*—
Keller, Alex J.; Dellinger, Keith S.; Ray, James L.; Cherry, Thomas A.; and Fechner, Erhard A., Re. 30,702, Cl. 57-268.000.

Steffan, Walter J.: *See*—
Paulson, John K.; and Steffan, Walter J., Re. 30,703, Cl. 124-1.000.

Williams, Ben; and Miller, George H. Button locking device. Re. 30,701, Cl. 24-90.00R.

LIST OF DESIGN PATENTEES

Aarflot, Kjell. Cross country ski boot. 260,120, 8-11-81, Cl. D2-276.000.

Acushnet Company: *See*—
Giebel, Charles; Rambo, Charles D.; and Spencer, Gary, 260,160, Cl. D21-217.000.

American Can Company: *See*—
Elchook, Frank, Jr.; and Schulz, Galyn A., 260,193, Cl. D59-2.00B.

American Safety Razor Company: *See*—
Chase, David O.; and Iten, Clemens A., 260,191, Cl. D28-46.000.

Andersson, Lars, to HAFA Fabriks AB. Light fixture housing. 260,187, 8-11-81, Cl. D26-85.000.

Appel, Mel; and Means, Paul B., to Appel, Mel. Toy fastener. 260,157, 8-11-81, Cl. D21-109.000.

Automatic Liquid Packaging, Inc.: *See*—
Pagels, Louis T., 260,178, Cl. D24-63.000.

Bercu, Riffy. Garden hose coiling device. 260,134, 8-11-81, Cl. D8-358.000.

Berg, Lennart, to Polarn Innovation Aktiebolag. Portable motor vehicular radio or similar article. 260,148, 8-11-81, Cl. D14-70.000.

Bicenko, Georges. Jewelry pendant. 260,140, 8-11-81, Cl. D11-79.000.

Boschetti, Armando; and Swanson, David W., to Paul B. Elder Company. Phototherapy cabinet. 260,176, 8-11-81, Cl. D24-39.000.

Boykin, Harvey L., Jr. Hair arranger. 260,188, 8-11-81, Cl. D28-10.000.

Breneman, Jack L., to Quaker Oats Company, The. Toy crane truck. 260,158, 8-11-81, Cl. D21-131.000.

Bridgestone Tire Co., Ltd.: *See*—
Takigawa, Hiroyoshi; and Kojima, Hiroshi, 260,142, Cl. D12-142.000.

Broken Hill Proprietary Company Limited, The: *See*—
Revill, Peter L., 260,136, Cl. D9-438.000.

Buck, Robert L. Theater building. 260,179, 8-11-81, Cl. D25-11.000.

Busse, Darrell L. Artificial candle. 260,186, 8-11-81, Cl. D26-11.000.

Cable, Richard B.; and Cable, Willie D. Infant carrier. 260,121, 8-11-81, Cl. D3-31.000.

Cable, Willie D.: *See*—
Cable, Richard B.; and Cable, Willie D., 260,121, Cl. D3-31.000.

Carl Schleicher & Schull GmbH & Co., KG: *See*—
Hein, Wolfgang; and Grundmann, Peter, 260,175, Cl. D24-21.000.

Carroll, James C.; and Johnson, Lewis T., to Phillips Petroleum Company. Bakery tray or similar article. 260,194, 8-11-81, Cl. D99-44.000.

Chapman, Darwin E.; and Zeiszler, James M. Photograpic timer. 260,138, 8-11-81, Cl. D10-40.000.

Chase, David O.; and Iten, Clemens A., to American Safety Razor Company. Disposable razor. 260,191, 8-11-81, Cl. D28-46.000.

Cordis Dow Corp.: *See*—
Geel, Zane H., 260,174, Cl. D24-21.000.

Corning Glass Works: *See*—
Rothstein, Estelle G., 260,126, Cl. D7-39.000.
Rothstein, Estelle G., 260,127, Cl. D7-39.000.

Cornwall, Kenneth R., to Ken-Wall, Incorporated. Protective cover for a sewer pipe flange. 260,170, 8-11-81, Cl. D23-41.000.

Costello, John C.: *See*—
Power, John J.; Van Wagener, Raymond H.; Costello, John C.; and Pulos, Arthur J., 260,133, Cl. D8-61.000.

Crosby, Samuel C., Jr.; and Whorton, Robert B., III, to Tannetics, Inc. Beverage dispensing machine. 260,152, 8-11-81, Cl. D15-112.000.

Dallaire, Raymond. Window component extrusion. 260,181, 8-11-81, Cl. D25-74.000.

Dallaire, Raymond. Window component extrusion. 260,182, 8-11-81, Cl. D25-74.000.

Dallaire, Raymond. Window component extrusion. 260,183, 8-11-81, Cl. D25-74.000.

Dart Industries Inc.: *See*—
Hiatt, Russell D.; and Painter, David L., 260,131, Cl. D7-85.000.

Dremel, John A. Combined table tennis table and rebound side walls. 260,154, 8-11-81, Cl. D21-14.000.

Duncan, Patricia E., to Minnesota Mining and Manufacturing Company. Wound drainage bottle. 260,177, 8-11-81, Cl. D24-54.000.

Elchook, Frank, Jr.; and Schulz, Galyn A., to American Can Company. Embossed bathroom tissue sheet. 260,193, 8-11-81, Cl. D59-2.00B.

Fairbanks, Lyman N. Adjustable shade mounting head and pull-rope guide assembly. 260,135, 8-11-81, Cl. D8-377.000.

Fluttaz, Francois. Wood stove. 260,171, 8-11-81, Cl. D23-97.000.

Gardisette International AG: *See*—
Stocker, Hans, 260,192, Cl. D47-6.00E.

Geel, Zane H., to Cordis Dow Corp. Hollow fiber artificial kidney. 260,174, 8-11-81, Cl. D24-21.000.

Giebel, Charles; Rambo, Charles D.; and Spencer, Gary, to Acushnet Company. Putter head. 260,160, 8-11-81, Cl. D21-217.000.

Goldfarb, Adolph E.; and Petersen, Hans B., to Goldfarb, Adolph E. Game board. 260,155, 8-11-81, Cl. D21-20.000.

Gould, Jason W. Illuminable pendant, charm or the like. 260,139, 8-11-81, Cl. D11-75.000.

Griffiths, Geoffrey A., to Mono Concrete Limited. Paving block. 260,185, 8-11-81, Cl. D25-91.000.

Grundmann, Peter: *See*—
Hein, Wolfgang; and Grundmann, Peter, 260,175, Cl. D24-21.000.

HAFA Fabriks AB: *See*—
Andersson, Lars, 260,187, Cl. D26-85.000.

Harris, David B. Lawn mower cover. 260,149, 8-11-81, Cl. D15-17.000.

Health-Mor Inc.: *See—*
Martinec, Eugene F., 260,151, Cl. D15-62.000.
Hein, Wolfgang; and Grundmann, Peter, to Carl Schleicher & Schull GmbH & Co., KG. Fluid filter unit. 260,175, 8-11-81, Cl. D24-21.000.
Henderson, Rosemary T. Chair. 260,124, 8-11-81, Cl. D6-67.000.
Hiatt, Russell D.; and Painter, David L., to Dart Industries Inc. Hot dog cooker. 260,131, 8-11-81, Cl. D7-85.000.
Hoese, Fred O. Vehicle overhead console. 260,143, 8-11-81, Cl. D12-155.000.
Hume, Peter J. Life jacket. 260,162, 8-11-81, Cl. D21-238.000.
Interdica, S.A.: *See—*
Perrin, Alain D., 260,130, Cl. D7-70.000.
International Business Machines Corporation: *See—*
Wiebe, Walter W., 260,173, Cl. D24-17.000.
Iten, Clemens A.: *See—*
Chase, David O.; and Iten, Clemens A., 260,191, Cl. D28-46.000.
Johnson, Lewis T.: *See—*
Carroll, James C.; and Johnson, Lewis T., 260,194, Cl. D99-44.000.
Johnson, Terry J. Cartridge. 260,164, 8-11-81, Cl. D22-10.000.
Ken-Wall, Incorporated: *See—*
Cornwall, Kenneth R., 260,170, Cl. D23-41.000.
Kojima, Hiroshi: *See—*
Takigawa, Hiroyoshi; and Kojima, Hiroshi, 260,142, Cl. D12-142.000.
Koltys, Norman R., to Manley, Charles F.; and Toze, Pamela, part interest to each. Medical identification card. 260,153, 8-11-81, Cl. D19-10.000.
Kyle, Virgil D. Osteopathic examining table. 260,172, 8-11-81, Cl. D24-3.000.
Lamb, Thomas. Chair. 260,123, 8-11-81, Cl. D6-41.000.
Manley, Charles F.: *See—*
Koltys, Norman R., 260,153, Cl. D19-10.000.
Martinec, Eugene F., to Health-Mor Inc. Top cover for tank type suction cleaner. 260,151, 8-11-81, Cl. D15-62.000.
Means, Paul B.: *See—*
Appel, Mel; and Means, Paul B., 260,157, Cl. D21-109.000.
Minnesota Mining and Manufacturing Company: *See—*
Duncan, Patricia E., 260,177, Cl. D24-54.000.
Miyamoto, Yoshimi, to Nippondenso Co., Ltd. Ignition high voltage cord cover. 260,144, 8-11-81, Cl. D13-13.000.
Miyamoto, Yoshimi, to Nippondenso Co., Ltd. Ignition high voltage cord cover. 260,145, 8-11-81, Cl. D13-13.000.
Mono Concrete Limited: *See—*
Griffiths, Geoffrey A., 260,185, Cl. D25-91.000.
Myojo, Seiji, to Shimano Industrial Company, Limited. Fishing reel. 260,166, 8-11-81, Cl. D22-25.000.
Neavin, William T. Fishing lure. 260,167, 8-11-81, Cl. D22-28.000.
Nippondenso Co., Ltd.: *See—*
Miyamoto, Yoshimi, 260,144, Cl. D13-13.000.
Miyamoto, Yoshimi, 260,145, Cl. D13-13.000.
Pagels, Louis T., to Automatic Liquid Packaging, Inc. Dispensing container for pharmaceutical diluents or the like. 260,178, 8-11-81, Cl. D24-63.000.
Painter, David L.: *See—*
Hiatt, Russell D.; and Painter, David L., 260,131, Cl. D7-85.000.
Palmer, Clarence K. Portable mixer. 260,150, 8-11-81, Cl. D15-19.000.
Paul B. Elder Company: *See—*
Boschetti, Armando; and Swanson, David W., 260,176, Cl. D24-39.000.
Perrin, Alain D., to Interdica, S.A. Champagne cooling bucket or the like. 260,130, 8-11-81, Cl. D7-70.000.
Persons, Angelus M. Deck of cards. 260,156, 8-11-81, Cl. D21-45.000.
Petersen, Hans B.: *See—*
Goldfarb, Adolph E.; and Petersen, Hans B., 260,155, Cl. D21-20.000.
Phillips Petroleum Company: *See—*
Carroll, James C.; and Johnson, Lewis T., 260,194, Cl. D99-44.000.
Polarn Innovation Aktiebolag: *See—*
Berg, Lennart, 260,148, Cl. D14-70.000.
Power. John J.; Van Wagener, Raymond H.; Costello, John C.; and Pulos, Arthur J., to Swingline Inc. Letter opener. 260,133, 8-11-81, Cl. D8-61.000.
Pulos, Arthur J.: *See—*
Power, John J.; Van Wagener, Raymond H.; Costello, John C.; and Pulos, Arthur J., 260,133, Cl. D8-61.000.
Quaker Oats Company, The: *See—*
Breneman, Jack L., 260,158, Cl. D21-131.000.
Rambo, Charles D.: *See—*
Giebel, Charles; Rambo, Charles D.; and Spencer, Gary, 260,160, Cl. D21-217.000.
Revill, Peter L., to Broken Hill Proprietary Company Limited, The. Can end. 260,136, 8-11-81, Cl. D9-438.000.
Rogers, Jody B. Seat cushion. 260,125, 8-11-81, Cl. D6-201.000.
Ross, Cecil J., to W. R. Weaver Company. Optical gun sight mount. 260,165, 8-11-81, Cl. D22-7.000.
Rothstein, Estelle G., to Corning Glass Works. Decal for culinary ware or the like. 260,126, 8-11-81, Cl. D7-39.000.
Rothstein, Estelle G., to Corning Glass Works. Decal for a plate or the like. 260,127, 8-11-81, Cl. D7-39.000.
Rush, Rodney D. Combined clock and cabinet door panel. 260,137, 8-11-81, Cl. D10-2.000.
Salazar, Mario. Electrical kilowatt-hour meter position adapter. 260,146, 8-11-81, Cl. D13-31.000.
Schulz, Galyn A.: *See—*
Elchook, Frank, Jr.; and Schulz, Galyn A., 260,193, Cl. D59-2.00B.
Shaffer, Frank E. Cable cutter. 260,132, 8-11-81, Cl. D8-52.000.
Shimano Industrial Company, Limited: *See—*
Myojo, Seiji, 260,166, Cl. D22-25.000.
Shun, So. Machine for grating, slicing and/or grinding foodstuffs. 260,129, 8-11-81, Cl. D7-47.000.
Sommerfeld, Michael J. Rosette iron. 260,128, 8-11-81, Cl. D7-43.000.
Spencer, Gary: *See—*
Giebel, Charles; Rambo, Charles D.; and Spencer, Gary, 260,160, Cl. D21-217.000.
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Sterner, Karl T. Support structure for a fish net. 260,168, 8-11-81, Cl. D22-30.000.
Stewart, Arthur H., Jr. Tent. 260,163, 8-11-81, Cl. D21-253.000.
Stocker, Hans, to Gardisette International AG. Curtain material. 260,192, 8-11-81, Cl. D47-6.00E.
Swanson, David W.: *See—*
Boschetti, Armando; and Swanson, David W., 260,176, Cl. D24-39.000.
Swingline Inc.: *See—*
Power, John J.; Van Wagener, Raymond H.; Costello, John C.; and Pulos, Arthur J., 260,133, Cl. D8-61.000.
Takahashi, Osamu, to Tomy Kogyo Co., Inc. Roller skating figurine toy. 260,159, 8-11-81, Cl. D21-150.000.
Takigawa, Hiroyoshi; and Kojima, Hiroshi, to Bridgestone Tire Co., Ltd. Vehicle tire. 260,142, 8-11-81, Cl. D12-142.000.
Tannetics, Inc.: *See—*
Crosby, Samuel C., Jr.; and Whorton, Robert B., III, 260,152, Cl. D15-112.000.
Thomas, Wesley L. Telephone. 260,147, 8-11-81, Cl. D14-53.000.
Tomy Kogyo Co., Inc.: *See—*
Takahashi, Osamu, 260,159, Cl. D21-150.000.
Toze, Pamela: *See—*
Koltys, Norman R., 260,153, Cl. D19-10.000.
Turner, Susan M., to Universal City Studios, Inc. Film storage box. 260,122, 8-11-81, Cl. D3-35.000.
Universal City Studios, Inc.: *See—*
Turner, Susan M., 260,122, Cl. D3-35.000.
Van Wagener, Raymond H.: *See—*
Power, John J.; Van Wagener, Raymond H.; Costello, John C.; and Pulos, Arthur J., 260,133, Cl. D8-61.000.
Vikre, Merle A. Irrigation spray head. 260,169, 8-11-81, Cl. D23-35.000.
W. R. Weaver Company: *See—*
Ross, Cecil J., 260,165, Cl. D22-7.000.
West, Angelina M. Sled. 260,141, 8-11-81, Cl. D12-9.000.
Whatley, William J. Utility pole. 260,184, 8-11-81, Cl. D25-77.000.
Whorton, Robert B., III: *See—*
Crosby, Samuel C., Jr.; and Whorton, Robert B., III, 260,152, Cl. D15-112.000.
Wiebe, Walter W., to International Business Machines Corporation. Electrocardiograph. 260,173, 8-11-81, Cl. D24-17.000.
Williams, Loyal E. Combined comb and case. 260,190, 8-11-81, Cl. D28-22.000.
Winkler, Frederic V. Hair dryer attachment. 260,189, 8-11-81, Cl. D28-18.000.
Zeiszler, James M.: *See—*
Chapman, Darwin E.; and Zeiszler, James M., 260,138, Cl. D10-40.000.
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CLASSIFICATION OF PATENTS

ISSUED AUGUST 11, 1981

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2

197 4,282,607
227 4,282,608
239 4,282,609
414 4,282,610

CLASS 4

144.1 4,282,611
601 4,282,612

CLASS 5

90 4,282,613
507 4,282,614

CLASS 7

164 4,282,615

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400 4,283,193
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531 4,283,196
638 4,283,197
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CLASS 10

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CLASS 14

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16.5 4,282,620
71.1 4,282,621

CLASS 15

41 R 4,282,622
97 R 4,282,623
210 B 4,282,624
236 R 4,282,625
320 4,282,626

CLASS 16

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18 A 4,282,628
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93 D 4,282,630
102 4,282,631

CLASS 17

11.1 R 4,282,632
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CLASS 23

230 A 4,283,201
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230 B 4,283,199
230 C 4,283,200

CLASS 24

90 R Re.30,701
230 R 4,282,634

CLASS 26

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91 4,282,636

CLASS 28

254 4,282,637

CLASS 29

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240 4,282,640
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469.5 4,282,642
527.2 4,282,643
566.3 4,282,644
570 4,282,645
571 4,282,646
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4,282,648
600 4,282,649

CLASS 30

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89 4,282,651
276 4,282,652
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CLASS 33

1 C 4,282,655
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CLASS 34

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CLASS 36

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CLASS 37

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CLASS 42

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CLASS 43

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CLASS 44

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81 4,282,675
118 4,282,676
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CLASS 52

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465 4,282,701
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CLASS 55

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187 4,283,206
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325 4,283,209
523 4,283,210

CLASS 56

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14.6 4,282,703
320.1 4,282,704
330 4,282,705
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CLASS 63

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CLASS 64

19 4,282,723
32 F 4,282,722

CLASS 65

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79 4,283,215
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360 4,283,218

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172 E 4,282,726
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CLASS 68

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CLASS 70

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456 R 4,282,733

CLASS 71

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116 4,282,747
155 4,282,750
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342 4,282,753
346 4,282,754
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650 4,282,756
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827 4,282,758
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862.58 4,282,749
862.66 4,282,748

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498 4,282,770
505 4,282,771
679 4,282,772
688 4,282,773
690 4,282,774
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804 4,282,777
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866 4,282,780
869 4,282,781

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175.5 4,283,226

CLASS 76

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CLASS 81

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CLASS 82

19 4,282,784

CLASS 84

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1.21 4,282,790
1.26 4,282,791
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414 4,282,793

CLASS 89

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148 4,282,795
198 4,282,796

CLASS 91

1 4,282,797
358 R 4,282,798
369 A 4,282,799

CLASS 92

37 4,282,800
102 4,282,801

CLASS 98

50 4,282,802

CLASS 100

5 4,282,803
4,282,804

CLASS 101

38 R 4,282,805
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41 4,282,807
93.07 4,282,808
212 4,282,809
376 4,282,810
451 4,282,811

CLASS 102

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4,282,814
431 4,282,813

CLASS 104

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CLASS 105

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CLASS 106

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73.3 4,283,228
171 4,283,229
274 4,283,230
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CLASS 108

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CLASS 112

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121.12 4,282,819
121.15 4,282,820
158 E 4,282,821

CLASS 114

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CLASS 116

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CLASS 118

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118 4,282,826
648 4,282,827

CLASS 119

3 4,282,828
19 4,282,829
21 4,282,830
75 4,282,831

CLASS 122

28 4,282,832
158 4,282,833
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CLASS 123

1 A 4,282,835
146.5 A 4,282,836
193 P 4,282,837
198 DB 4,282,838
335 4,282,839
412 4,282,840
425 4,282,841
440 4,282,842
450 4,282,843
502 4,282,844
568 4,282,845
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CLASS 124

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24 R 4,282,850
35 A 4,282,851
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CLASS 126

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25 B 4,282,854
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422 4,282,857
425 4,282,858
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429 4,282,860
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439 4,282,862

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CLASS 128

1 C 4,282,864
1 R 4,282,863
25 R 4,282,865
66 4,282,866
4,282,867
75 4,282,868
200.28 4,282,869
203.14 4,282,870
207.18 4,282,871
213 R 4,282,872
276 4,282,873
287 4,282,874
325 4,282,875
349 R 4,282,876
355 4,282,877
641 4,282,878
660 4,282,879
4,282,880
674 4,282,881
676 4,282,882
726 4,282,883
751 4,282,884
785 4,282,885
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804 4,282,887

CLASS 130

30 R 4,282,888

CLASS 131

281 4,282,889
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351 Re.30,704

CLASS 132

73.5 4,282,891

CLASS 133

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CLASS 134

167 R 4,282,893

CLASS 136

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249 4,283,589
251 4,283,590
256 4,283,591

CLASS 137

15 4,282,894
281 4,282,895
495 4,282,896
515.7 4,282,897
596.13 4,282,898
624.18 4,282,899
625.3 4,282,900
625.64 4,282,901
636.1 4,282,902
893 4,282,903

CLASS 138

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CLASS 139

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CLASS 140

93.4 4,282,907
147 4,282,908

CLASS 141

98 4,282,909

CLASS 144

3 K 4,282,910

CLASS 148

11.5 R 4,283,233
32.5 4,283,234
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187 4,283,236

CLASS 149

19.91 4,283,237

CLASS 150

1 4,282,911
1.5 C 4,282,912

CLASS 152

209 D 4,282,914
209 R 4,282,915
241 4,282,916
352 R 4,282,917
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CLASS 156

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74 4,282,905
85 4,283,239
98 4,283,240
117 4,283,241
154 4,283,242
237 4,283,243
242 4,283,244
476 4,283,245
555 4,283,246
601 4,283,247
637 4,283,248
643 4,283,249

CLASS 159

9 R 4,283,250

CLASS 160

23 R 4,282,919
133 4,282,920

CLASS 162

17 4,283,251
23 4,283,252

CLASS 164

97 4,282,922
463 4,282,921

CLASS 165

1 4,282,926
9.1 4,282,923
80 E 4,282,924
94 4,282,925
166 4,282,927

CLASS 166

274 4,282,928
303 4,282,929
305 R 4,282,930

CLASS 169

61 4,282,931

CLASS 171

63 4,282,932

CLASS 172

4.5 4,282,933
22 Re.30,705
26 4,282,934
284 4,282,935
512 4,282,936

CLASS 173

1 4,282,937
162 H 4,282,938

CLASS 174

21 R 4,283,592
36 4,283,593
47 4,283,594
73 R 4,283,595
84 R 4,283,596
138 F 4,283,597
169 4,283,598

CLASS 175

7 4,282,939
11 4,282,940
267 4,282,941
269 4,282,942
394 4,282,943

CLASS 178

22.1 4,283,599

CLASS 179

1 J 4,283,600
1 SD 4,283,601
1.5 R 4,283,602
18 FA 4,283,603
70 4,283,604
110 A 4,283,605
115.5 H 4,283,606

CLASS 180

2 A 4,282,944
71 4,282,945
128 4,282,946
165 4,282,947
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252 4,282,949

CLASS 181

257 4,282,950

CLASS 182

221 4,282,951

CLASS 188

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CLASS 191

12.4 4,282,954

CLASS 192

0.096 4,282,955
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9 4,282,957
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58 B 4,282,961
58 C 4,282,960
105 CD 4,282,962
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CLASS 198

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380 4,282,965
382 4,282,966
571 4,282,967
735 4,282,968
747 4,282,969
772 4,282,970
846 4,282,971

CLASS 200

38 R 4,283,607
44 4,283,608
67 D 4,283,609
146 R 4,283,610
252 4,283,611
334 4,283,612
340 4,283,613

CLASS 201

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CLASS 203

4 4,283,254
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CLASS 204

1 T 4,283,256
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195 M 4,283,262
195 S 4,283,261
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263 4,283,266

CLASS 206

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444 4,282,973
509 4,282,974
566 4,282,975

CLASS 208

8 LE 4,283,267
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45 4,283,269
50 4,283,270
59 4,283,271
4,283,272
113 4,283,273
120 4,283,274

CLASS 209

3 4,283,275
155 4,283,276
166 4,283,277
395 4,283,278

CLASS 210

123 4,283,279
198.2 4,283,280
232 4,283,281
236 4,283,282
282 4,283,283
321.3 4,283,284
326 4,283,285
365 4,283,286
448 4,283,289
643 4,283,290

CLASS 211

49 D Re.30,706
59.1 4,282,976
74 4,282,977

CLASS 212

205 4,282,978

CLASS 213

29 4,282,979

CLASS 215

100 A 4,282,980

CLASS 219

10.55 R 4,283,614
66 4,283,615
76.14 4,283,616
125.1 4,283,617
130.5 4,283,618
492 4,283,619

CLASS 220

75 4,282,981
237 4,282,982
335 4,282,983
404 4,282,984

CLASS 221

254 4,282,985

CLASS 222

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CLASS 224

31 4,282,993
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CLASS 225

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CLASS 226

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CLASS 229

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1 C 4,283,004
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CLASS 235

92 SH 4,283,620
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CLASS 236

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CLASS 241

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CLASS 244

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215 4,283,029

CLASS 246

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468 4,283,030

CLASS 248

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263 4,283,034
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441 B 4,283,037
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292 4,283,626
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358 P 4,283,628
445 T 4,283,629
492 B 4,283,630
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503 4,283,632
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CLASS 251

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30 4,283,040
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CLASS 252

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40 R 4,283,326
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